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ANNUAL REPORT EIGHTH EDITION AND FINAL STATUS OF NATURAL RESOURCE LEGISLATION IN THE 48th LEGISLATURE

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This letter introduces the Eighth Edition of the Annual Report prepared by the Montana Environmental Quality Council.

It's been a dozen years since the 1971 Montana Legislature passed the Montana Environmental Policy Act, which created the EQC. The way we use both MEPA and EQC has changed since that time.

The environmental reviews first required by MEPA have largely become an integral part of the resource decisions made by state agencies, companies and individuals. The EQC has moved beyond its early technical and administrative efforts toward implementing MEPA into the role of a watchdog office, continually monitoring the issues and actions affecting Montana's environment.

That's not to say the process has always gone smoothly, nor is every resource conflict avoided or resolved without an argument. There are legitimate disagreements over how we should use our natural resources. MEPA and EQC cannot make those differences disappear. What they can do is make better information on those resources available to all the interested parties. The result, we hope, is that better communication will lead to better project planning and better resource decisions. If we succeed in that goal, every Montanan benefits.

Dennis Iverson
EQC Chairman

MONTANA
ENVIRONMENTAL
QUALITY
COUNCIL

ANNUAL REPORT
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AND
FINAL STATUS OF NATURAL RESOURCE LEGISLATION IN THE 48th LEGISLATURE

DECEMBER 31, 1983

PREFACE

This is the Eighth Edition of the Environmental Quality Council's Annual Report. The Montana Environmental Policy Act requires the EQC to prepare for the governor, the legislature and the general public a far-ranging yearly report on environmental conditions, issues and trends in Montana.

This edition returns to a format established in early annual reports: general information on a broad range of topics, along with a review of environmental legislation considered by the preceding legislative session. This is a non-technical presentation of a great deal of technical data; of course, it cannot be either comprehensive or exhaustive. But we hope that the reviews of each topic will be useful for most general readers. For the readers interested in more detailed information, we've included a "Resources" section after each topic explaining the written sources used in preparing this report. These sources, along with extensive assistance from appropriate state agencies, made this report possible.

There are obvious limitations to an overview report like this one. But while we cannot treat any one topic with the discussion it might deserve, there are several advantages to this format. First, we can present general information in a non-intimidating way to readers who might hesitate to pick up a 200-page specialized technical document. Second, we can widely publicize the availability of those in-depth documents, increasing the audience that can use them. And third and most important, we can recognize the interdependence of the vast range of factors that make up Montana's environment. As former Representative George Darrow, the first EQC chairman, stated in the First Annual Report: "It is a basic ecological insight that all environmental problems are interwoven, interrelated and interacting. No project, no action by state government has only a single consequence." As the office in Montana state government specifically charged with monitoring all these interdependent factors, the Environmental Quality Council presents its Eighth Annual Report.

MONTANA ENVIRONMENTAL QUALITY COUNCIL

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Many people helped us plan, prepare and review this report. While we can't mention each by name, we still want to acknowledge their important contributions.

Of special note are Dr. Lauren McKinsey and the staff of the 49th Parallel Institute, who prepared the material for the Montana/Canada Relations chapter. Jack Schmidt and Don Snow helped with the Coal Resources chapter. And the Energy Division of the Department of Natural Resources and Conservation allowed us to use their map of Energy Resources and Facilities in Montana.

Finally, Jim Herman, Fran O'Hara and Pam Hyatt from the Department of Fish, Wildlife and Parks helped us through the maze of telecommunicating our text. To all these people, our thanks.

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MONTANA ISSUES

AIR QUALITY

Most areas of Montana have exceptionally clean air. Poor air quality, however, remains in some of Montana's communities, particularly in the larger cities where industrial, residential and transportation pollution sources are concentrated. In some of these areas, physiography intensifies air quality problems in the fall and winter. This report summarizes the present air quality in Montana and, where possible, identifies trends.

Pollutants

Sulfur Compounds

While sulfur occurs naturally in the environment, human activities have increased atmospheric sulfur by adding sulfur oxides. Sulfur dioxide (SO_2), a byproduct of the combustion and smelting processes, is the principal sulfur compound released by these activities. It reacts with atmospheric oxygen and water to form airborne sulfuric acid (a fine mist of droplets) and sulfate particles. The sulfuric acid may react with metal oxides formed in the burning of fossil fuels to produce metal sulfates. Another common sulfuric emission is hydrogen sulfide (H_2S), which primarily originates from sewage treatment, kraft pulp mills, oil well flares and vents, and oil refineries. In Montana, refineries, power plants, smelters and wood products industries produce the bulk of these sulfur compounds.

Effects

Sulfur compounds irritate human and animal eyes, nose, throat and lungs. SO_2 has been shown to reduce the passage of air through the lungs and studies have shown a positive link between exposure to sulfur compounds and the incidence of respiratory problems. Even at low concentrations, hydrogen sulfide smells unpleasant; higher concentrations can lead to loss of sense of smell, severe respiratory irritation, and, in very high concentrations, death. Children, the elderly

and people with health problems are especially sensitive to sulfur pollution.

Most observations of the health effects of sulfur compounds come from episodes of high SO_2 at the same time total suspended particulate levels are high. Normally, the upper respiratory tract absorbs SO_2, but particulate matter can carry sulfur compounds to the innermost recesses of the lungs, thereby causing greater damage than either would cause alone. The pollutants act synergistically; their effect together is greater than the sum of their individual effects.

High concentrations of SO_2 can cause chlorosis in plants, which is a discoloring of leaf tissue due to a loss of chlorophyll. During acute exposure, leaf tissue may die. Sternberg (1981) documented significant decreases in crop yield from SO_2 pollution. Because many forage plants are sensitive to SO_2, livestock grazing can be adversely affected. The SO_2 also reacts synergistically with ozone and NO_2, damaging plants at lower concentrations than any of the pollutants would by itself.

Acid mists, or high concentrations of suspended acidic droplets, can corrode metals and cause extensive damage to steel rails, buildings and structures. Carbonate building materials, such as marble, concrete and mortar, are particularly susceptible to damage from acid mist. H_2S can also tarnish and corrode metals, particularly silver and copper.

Photochemical Oxidants

It takes a complex series of chemical reactions among nitrogen oxides, hydrocarbons, and sunlight to produce photochemical oxidants. These are compounds capable of oxidizing substances that common oxygen in the air cannot. The nitrogen oxides usually originate from the high-temperature combustion of fossil fuels, particularly in automobile engines. Hydrocarbons, containing only carbon and hydrogen, also mainly originate in motor vehicles. Smaller sources include petroleum refining and transfer operations and evaporation of industrial solvents used in painting and dry cleaning.

Effects

Nitrogen dioxide in high concentrations creates an unpleasant odor and diminishes night vision. A study of school children living near an explosives plant that produced NO_2 showed an increase in respiratory illness and decreased ventilatory function. Lung damage, including bronchial damage and acute pulmonary edema, can result from high NO_2 concentrations.

Studies have yet to demonstrate direct human health problems caused by hydrocarbons. However, hydrocarbons contribute to photochemical oxidants, which do affect people. The oxidants irritate the eyes, nose and throat, and often the respiratory tract. Many researchers believe that high oxidant levels also debilitate athletic performance and harm asthmatics.

Photochemical oxidants significantly reduce visibility. This can reduce tourism and population growth in certain areas. Ozone damages many materials. For example, it attacks organic and synthetic fibers and deteriorates rubber. Photochemical oxidants are the country's most significant plant-damaging pollutant.

Carbon Monoxide

The incomplete combustion of organic fuel produces carbon monoxide (CO), a colorless and odorless gas. The principal sources of CO are motor vehicles, but other sources in Montana include oil refineries, the wood products industry, and wood stoves and fireplaces.

Effects

Carbon monoxide outcompetes oxygen for the blood's hemoglobin. High levels of CO significantly decrease the flow of oxygen to the areas of the body that depend on it most: the heart and the brain. As the oxygen concentration carried by the hemoglobin decreases, the heart must work harder to compensate, in turn increasing its need for oxygen. Symptoms of excess CO exposure include headaches, dizziness, fatigue, and sluggish reactions; excessive exposure can lead to death. CO may inhibit the bioelectric functions of the brain, and thus impair intellectual ability. Heart patients, smokers, young and old people, pregnant women and persons on medication may be particularly susceptible to high concentrations of CO.

Fluoride

Fluoride sources include aluminum, glass, brick, phosphate fertilizer and elemental phosphorus plants;

coal-burning industries can also emit fluoride. In Montana there are two major stationary sources of fluoride: the ARCO aluminum smelter in Columbia Falls and Stauffer Chemical Company's elemental phosphorus plant in Ramsay. The coal-fired power plants in Colstrip, Billings and Sidney and oil refineries in Billings and Great Falls also release some fluorides.

Effects

High concentrations of fluoride can harm vegetation, animals and humans. Some researchers hypothesize that fluorides are carcinogens and co-carcinogens. Fluoride can reduce the red blood cell count, thereby decreasing oxygen uptake within the body. Plants accumulate fluoride. Excessive amounts inhibit the plants' metabolic processes of photosynthesis, growth, and reproduction. Such damage ultimately kills the affected tissue. Animals that graze on vegetation contaminated by fluoride also accumulate the pollutant in their bones and teeth, causing tooth loss and fluorosis, a crippling bone disease. This can be fatal for such grazing animals as cattle. Therefore, fluoride pollution can cause major economic damage.

Suspended Particulate

Suspended particulate matter, or airborne particles, originate from both natural and man-made sources. Natural sources include forest fires and erosion. Man-made sources include industrial processes, unpaved roads, gravel and asphalt batch plants, agriculture, motor vehicles, transportation, incinerators, construction, residential heating devices and refuse-burning operations. The particulate varies in size, form (solid or liquid) and chemical makeup. Coarse particles range between 2.5 micrometers (um) and 15 um in diameter. Fine particles range up to 2.5 um in diameter. Fine particulate remains suspended in the atmosphere for long periods, while coarse particulate usually settles out close to the source.

Effects

The nose and throat usually trap coarse particles, preventing serious health threats. But fine particulate can penetrate the deep recesses of the lungs. Fine particulate can adversely affect health in three ways. First, some airborne particles, such as asbestos, beryllium, cadmium and lead, are toxic. Second, the accumulation of non-toxic fine particles can "overload" the lung and interfere with its self-cleaning ability. Third, the particulate can enhance the harmful effects of other pollutants. The particles may carry carcinogenic substances to the lungs. Through injury to lung and throat linings, TSP weakens the body's resistance to infection. In general, high levels of particulate matter increase new respiratory disorders, aggravate existing respiratory diseases, and irritate eyes, nasal passages and skin. People suffering from respiratory and heart ailments are extremely susceptible to elevated particulate concentrations. Currently, the EPA is considering implementing an ambient standard based on inhalable particulate to replace the total suspended particulate standard it now uses.

Particulate in the air reduces visibility; large particles absorb light and small particles scatter light. Particles can also modify such weather conditions as temperature, humidity, cloud cover, precipitation and fog. It can help form secondary particles, such as acid sulfates and nitrates, that as acid snow or rain can seriously affect plants, animals and materials. The combination of sulfur oxides and particulate matter causes serious economic loss through soiling and deteriorating material. In addition, particles containing heavy metals accumulate in plants and animals and may damage them after extended periods of low-level pollution.

Trace Metals

Airborne trace metals generally result from combustion, smelting, open pit mining and automobiles. Principal stationary sources of trace metals in Montana include the ASARCO smelter in East Helena (lead, cadmium and arsenic); the Berkeley open pit mine in Butte (pulverized ore and unconsolidated soil exposed to wind); and coal-fired power plants (lead, arsenic, nickel, copper, zinc, selenium and cadmium). The emissions from coal-burning facilities vary considerably with the composition of the coal. Automobiles using leaded gasoline are a major non-stationary source of airborne lead particles.

Effects

Trace metals present a serious health risk, even in small concentrations, because many are highly toxic. They can accumulate and cause injury after long exposure to low levels. Lead can cause anemia, kidney malfunction, brain damage and, ultimately, death.

Small children, fetuses and pregnant women are particularly susceptible to lead poisoning. Arsenic is extremely toxic. Exposure to arsenic dust can cause mild bronchitis, nasal irritation, and dermatitis. But researchers hypothesize that arsenic can cause cancer, particularly skin cancer, in humans. Exposure to high levels of cadmium damages the liver, kidney and bones and initiates heart and lung diseases. At high enough levels, any of these trace metals can kill.

Trace metals accumulate in plants, animals and soils. They can damage agricultural crops and other plants by directly destroying plant tissue. In animals, these toxins concentrate in the lungs when inhaled and in the kidneys and bones when ingested. Poisoning of grazing cattle by trace metals can be a severe economic burden to ranchers.

PAH

Both natural and human processes, such as plant metabolism and fossil fuel combustion, liberate compounds known as polycyclic aromatic hydrocarbons (PAH). In Montana, PAH sources include automobiles (especially diesel engines), coal-fired power plants, oil refineries, residential wood-burning devices and open burning.

Effects

The frequent occurrence of PAH in the environment and its exceptional potency make it a health concern. PAH causes cancer in animals. Most research on the health risks of PAH has concentrated on benzo(a)pyrene (BaP), a strong carcinogen found in cigarette smoke, soot, wood smoke and coal combustion products. The body metabolizes PAH to form other chemicals that can cause cell transformation, mutation, and cytotoxicity.

Montana Air Pollution Study

In response to disturbingly high death rates from lung and respiratory ailments in several Montana communities known to have air pollution problems, the 1977 Montana Legislature appropriated funds for the Montana Air Pollution Study (MAPS). Completed in 1981, the study represents the most thorough investigation in Montana into the effects of air pollution on human health. Specific studies included lung function testing of school children and persons with respiratory diseases; screening for carcinogenic substances in children's urine in the Butte-Anaconda area; monitoring hospital admissions during severe air pollution episodes; and, comparing mortality rates to air pollution in Deer Lodge, Lake, and Silver Bow Counties during 1970-1975.

Meteorology

The climate and topography of a region significantly influence the effects of air pollutants in a region. For example, precipitation can cleanse the air; sunshine can help form photochemical smog; and slow mixing, light wind high pressure systems can confine air pollution to areas for long periods. One weather phenomenon, inversion, can place a thermal lid over a region and create air stagnation. Normally, the temperature of the air decreases with altitude. During an inversion, an upper layer of lighter, warmer air traps a layer of denser, colder air and prevents vertical mixing. Inversions happen more frequently and last longer in valley areas surrounded by high mountains. Occasionally, a high pressure system causes an inversion over an area for several days. Such extended inversions in areas with intense pollution can even cause death.

The majority of Montana communities faced with air pollution problems are those in western valleys that are frequently subject to thermal inversions and air stagnation during the winter months.

Regulations

In response to a growing concern about the effects of air pollution on human health, natural resources and property, the Montana Legislature passed the Montana Clean Air Act in 1967.
The act states:

"It is hereby declared to be the public policy of this state and the purpose of this chapter to achieve and maintain such levels of air quality as will protect human health and safety and, to the greatest degree practicable, prevent injury to plant and animal life and property, foster the comfort and convenience of the people, promote the economic and social development of this state, and facilitate the enjoyment of the natural attractions of this state." (75-2-102, MCA)

Subsequent changes in the Montana Clean Air Act have paralleled amendments to the Federal Clean Air Act, including important amendments of 1970. These established ambient air quality standards for five pollutants: sulfur oxides, particulates, carbon monoxide, hydrocarbons and photochemical oxidants. These standards were designed to limit pollutant levels to those considered safe for public health and welfare. States were directed to establish implementation plans to bring all areas into compliance with the standards. The EPA was required to set emission standards for various industries based on plant technology. Theoretically, these standards would ensure meeting ambient standards while taking into account the economic effects of the standards. Congress appeared to have decided that some adverse effects on industry were acceptable in order to meet these goals.

In Montana, a seven-member Board of Health

Air Quality Standards

Pollutant	Montana Standard	Federal Primary Standard	Federal Secondary Standard
Total Suspended Particulates	75 ug/m³ annual average	75 ug/m³ annual geometric mean	60 ug/m³ annual geometric mean
	200 ug/m³ 24-hr average*	260 ug/m³ 24-hr average*	150 ug/m³ 24-hr average*
Sulfur Dioxide	0.02 ppm annual average 0.10 ppm 24-hr average* 0.50 ppm 1-hr average**	0.03 ppm annual average 0.14 ppm 24-hr average*	0.5 ppm 3-hr average*
Carbon Monoxide	9 ppm 8-hr average* 23 ppm hourly average*	9 ppm 8-hr average* 35 ppm 1-hr average*	9 ppm 8-hr average*
Nitrogen Dioxide	0.05 ppm annual average	0.05 ppm annual average	0.05 ppm annual average
Photochemical Oxidants (ozone)	0.10 hourly average*	0.12 ppm 1-hour average*	0.12 ppm 1-hr average*
Lead	1.5 ug/m³ 90-day average	1.5 ug/m³ calendar quarter average	None
Foliar Fluoride	35 ug/g grazing season average 50 ug/g monthly average	None	None
Hydrogen Sulfide	0.05 ppm hourly average*	None	None
Settled Particulate (Dustfall)	10 gm/m³ 30-day average	None	None
Visibility	Particulate scattering coefficient of 3×10^{-5} per meter annual average***	None	None

* Not to be exceeded more than once per year
** Not to be exceeded more than 18 times per year
*** Applies to PSD Class I areas

Source: DHES

administers the provisions of the Montana Clean Air Act. The Air Quality Bureau of the Department of Health and Environmental Sciences monitors air quality, conducts air quality research, enforces standards and advises the board. In addition, some of the Indian tribes of Montana have environmental protection offices to monitor and regulate air quality on their reservations.

Located throughout the state, the Air Quality Bureau's ambient air monitoring stations provide data on various pollutants. In problem areas, they characteristically record levels higher than state and federal ambient air quality standards.

A 1977 enforcement case revealed that the Montana Ambient Air Quality Standards that existed then were goals or guidelines, rather than enforceable standards. This precipitated a lengthy revision process entitled the Montana Ambient Air Quality Study. The Board of Health adopted a set of standards for enforcement in 1980. In 1981, the Montana Legislature ordered the board to substitute a forage standard for fluoride in place of the board's ambient air standard. The table below contains the current Montana standards and compares them to the national standards. Primary standards reflect levels intended to protect public health with an adequate margin of safety; secondary standards reflect levels intended to protect public welfare.

Once an area meets or exceeds the national standards, the Prevention of Significant Deterioration (PSD) regulations come into effect. The 1977 amendments established the PSD program to prevent significant deterioration of air that is cleaner than that required by the national ambient air quality standards. The PSD regulations, which limit increases in ambient levels of SO_2 and particulates, apply to new pollution sources that are constructed in these areas. There are three PSD categories:

Class I: an area where almost any measurable change in air quality is significant. National parks and wildernesses are Class I areas.
Class II: an area where air pollution standards will allow for moderate, well-controlled growth.
Class III: an area with an existing significant air quality problem equal to about one-half of the air quality standards.

Any state or Indian governing body may petition to redesignate its area from Class II to either Class I or III. The Flathead and Northern Cheyenne Indian Reservations have changed from a Class II to a Class I area. The Assiniboine and Sioux tribes from the Fort Peck Indian Reservation have recently received EPA approval for their redesignation request.

The table below lists the allowable increments of pollutants allowed over "existing levels" in each class.

Montana PSD Class 1 Areas

1. Glacier National Park
2. Cabinet Mountain Wilderness
3. Flathead Indian Reservation
4. Mission Mountain Wilderness
5. Bob Marshall Wilderness
6. Lincoln Scapegoat Wilderness
7. Selway Bitterroot Wilderness
8. Anaconda Pintlar Wilderness
9. Gates of the Mountains Wilderness
10. Red Rock Lakes National Wildlife Refuge
11. Yellowstone National Park
12. U L Bend Wilderness Area
13. Northern Cheyenne Indian Reservation
14. Medicine Lake National Wildlife Refuge
15. Fort Peck Indian Reservation

PSD Allowable Increments (Micrograms/ Cubic Meter)

	I	II	III	Not to exceed
Particulates				
Annual Geo. Mean	5	19	37	75
Maximum 24-hour	10	37	75	150
Sulfur Dioxide				
Annual Arith. Mean	2	20	40	80
Maximum 24-hour	5	91	182	365
Maximum 3-hour	25	512	700	1300

Source: DHES

In 1978, Montana established its first PSD rules, which were patterned after the federal PSD rules. In compliance with *Alabama Power v. EPA*, the EPA rewrote its regulations in 1979, which necessitated a corresponding change in Montana's regulations. The Board of Health and Environmental Sciences has amended its PSD rules to minimize the growth of air pollution in clean air areas. The new regulations are controversial, especially the definition of "baseline date", or the time after which the PSD increments must include additional pollution sources. SO_2 standards use statewide baseline data; particulates use an areawide basis. The proposed rules allow the governor discretion in excluding from the allowable increment any increase in concentrations attributable to new sources outside the U. S. This rule may pertain to the Cabin Creek coal mining development and the Poplar River power plants in Canada which may affect Class I areas in Montana with SO_2 emissions.

Federal and state statutes have decreased air pollution in Montana over the past 20 years. Currently, 139 of the 140 sources in Montana that emit at least 25 tons of pollutants per year comply with the stationary source emission regulations of the state's air pollution control plan. The one source not already in compliance is on a schedule to meet the standards.

However, Montana has serious air pollution problems, with measured levels of several air pollutants high enough to harm humans. An individual source may comply with stationary source emission standards, but some areas may still not meet ambient standards. The more elusive sources of pollution, such as motor vehicles, residential wood stoves and fireplaces, and dusty roads, prove difficult to control and remain a persistent and often serious problem.

Special Areas

Anaconda

Historically, the Anaconda copper smelter emitted levels of SO_2 exceeding state and federal ambient air quality standards. Stagnant weather conditions intensified the problem, since inversions occurred about 40 percent of the year. In 1977, EPA declared the Anaconda area non-attainment for SO_2. In September 1980, the Anaconda Company closed its smelter, thereby eliminating the major source of sulfide emissions in the Deer Lodge Valley. The EPA has reclassified Anaconda as attainment for SO_2.

Lung cancer rates nearly twice that of the national average, as well as high death rates from asthma, chronic bronchitis, emphysema, and cerebrovascular disease in Deer Lodge, Silver Bow, and Lake counties prompted an investigation during MAPS. However, the overwhelming influence of tobacco smoking prevented the MAPS researchers from concluding that high levels of ambient air pollution were related to high death rates.

Billings

Billings suffers from high levels of TSP, SO_2 and CO. Sources of these pollutants include three oil refineries, a coal-fired power plant, a sugar beet factory, a sulfur plant, automobiles, road dust and residential wood-burning. Frequent calm air and surface-based inversions lead to stagnant air, especially in the wintertime. In 1977, the EPA designated the Billings area non-attainment for CO and particulates, and the Laurel area for SO_2. Ambient SO_2 levels near Laurel appear to be decreasing. In cooperation with the six SO_2-emitting industries in Billings, the AQB is now studying ambient sulfur dioxide levels and industrial emissions in order to classify the area.

Particulate levels in the downtown area of Billings currently exceed the secondary TSP standards. The highest levels of respirable particulate occur in winter. High CO levels remain confined to the downtown area; they result from heavy traffic. Ambient air samples collected for the MAPS study showed high levels of potential carcinogens.

Butte

EPA declared Butte non-attainment for particulate in 1978. TSP sources included an open pit copper mine, a tepee burner, residential heating devices, an asphalt batch plant, unpaved roads and a copper ore concentrator. The Butte area experiences frequent inversions, especially during the winter months. Studies indicated that in 1980-1981, ARCO's Berkeley Pit mine contributed between 30 percent and 50 percent of Butte's particulates. However, TSP from other sources, such as unpaved roads and residential solid fuel combustion, is increasing. The highest levels of

respirable particulates occur in late autumn or winter. An analysis of air samples taken in 1980 revealed fairly high levels of heavy metals, probably due to local mining activity.

As part of MAPS, Butte children participated in a mutagen-screening test to detect potential cancer-causing substances in their urine. MAPS discovered that many of the children tested at the Monroe Elementary School had significantly elevated levels. Nearly all of those children resided near Front Street, a major east-west thoroughfare running parallel to railroad tracks. Mutagen testing is continuing on the children of Butte.

Columbia Falls

In the past, fluoride levels in Columbia Falls consistently exceeded the state ambient air quality standards. The Anaconda Aluminum Plant is the major source of fluoride. The plant currently complies with the 1981 emission standard of 1.3 grams fluoride per kilogram of aluminum produced. Ambient levels appear to be decreasing each year.

In 1977, EPA designated Columbia Falls as non-attainment for TSP for violations of state and federal standards. Sources of particulate include several wood products enterprises, asphalt plants, unpaved roads, open burning of wood and the aluminum reduction plant. In the summer of 1982, the state paved Nucleus Avenue, the city's main street, to minimize road dust.

Eastern Montana

Eastern Montana contains vast areas with good air quality, but pollution does exist. Sources include agriculture, coal mining, coal-fired power plants at Colstrip and Sidney, natural gas sweetening plants, oil well flares and vents, and a sugar beet factory. Both particulate and SO_2 levels stay generally low and do not approach violations of the standards. EPA designated the Colstrip area non-attainment for particulates in 1977, based on company data documenting violations near sites of mining activity. TSP from coal mining activity has decreased since then, leading to speculation that the area will become attainment in the near future.

The AQB conducted a special ambient air study of the Poplar River area between 1978 and 1982 to predict the impacts of four Canadian 300-MW coal-fired power plants. Located a few miles north of Scobey, one of the plants began operating in 1980. Emissions from the plant will probably not exceed ambient air quality standards. However, PSD violations are expected under certain circumstances.

East Helena

Monitoring sites in East Helena have recorded high levels of lead, particulate and SO_2. In 1977, the area became non-attainment for the latter two pollutants. However, SO_2 levels have decreased considerably since 1978, meeting federal and state ambient air quality standards during the past two years. The ASARCO lead smelter in East Helena has met the emission standards for SO_2 since 1981.

East Helena registers the state's highest ambient lead concentrations, exceeding the federal and state ambient standards. Lead sources include the ASARCO lead smelter, ore piles, motor vehicles and road dust contaminated with lead. The AQB completed a one-year study of East Helena pollutants in August 1982; it showed lead levels up to three times that allowed by federal law at several locations throughout the city. The AQB is currently negotiating a plan with ASARCO to meet the ambient lead standards by the end of 1984. East Helena's concentrations of cadmium and arsenic were also the highest in Montana between 1979 and 1981.No standards exist for these metals.

TSP sources in East Helena include road dust, ore piles, combustion sources and the ASARCO and American Chemet plants. Standards were exceeded for TSP in 1979 and 1980. The AQB is currently devising a control strategy for reducing particulate pollution in this area.

Great Falls

Great Falls does not suffer inversion problems, thanks to its air circulation patterns. Air pollution sources include grain mills, an oil refinery, automobiles and home heating devices. The Anaconda Company closed its Great Falls copper refinery in 1980. The area is non-attainment for TSP (secondary standard) and CO. High carbon monoxide levels remain confined to a busy street where in past years several violations of the eight-hour CO standard occurred. The Great Falls City-County Planning Board plans to reduce CO levels by synchronizing traffic lights and widening roads. Particulate levels do not show any clear trends. During the MAPS study, respirable particulates measured at Kiwanis Park were the lowest for a major population center in the state. Of all five communities tested in the MAPS, Great

Falls elementary school children scored best on lung function tests.

Missoula

The sources of air pollution in Missoula have changed over the past 20 years, but the problem has not. Missoula suffers from high particulate levels. In the past two decades, the area's numerous wood products industries were the major source of particulate emissions. Now, residential solid fuel devices have become the dominant source. These devices contributed 50 percent to 75 percent of the respirable particulate during the 1980-1981 winter season. Other sources of TSP include road dust, open burning of wood, and the wood product industries. Extreme inversions lasting several days in the fall and winter are common in Missoula.

In addition to its particulate problem, Missoula is classified non-attainment for CO. Carbon monoxide levels consistently exceed the eight-hour standard at one busy intersection. Wood-burning devices and transportation are the two major sources of CO in Missoula.

Two health studies conducted as part of MAPS demonstrated the adverse impacts of high TSP levels in Missoula. As particulate levels increased, children's scores on lung function tests decreased. And for Missoula adults afflicted with respiratory ailments, lung function decreased with increasing pollution levels. Missoula concentrations of potential cancer-causing substances measured during the winter months were the highest in the state.

Northwestern Montana

TSP levels at various sites in northwestern Montana have consistently exceeded federal and state standards. Particulate sources include numerous wood products enterprises, asphalt plants, open burning of wood, road dust and residential wood burning. The highest levels of TSP in the state occur in Libby. The AQB plans to conduct a detailed analysis of the particulate problem there. The valley topography of northwestern Montana magnifies the problem, as inversions occur often, especially in winter.

In 1977, the EPA initiated the Flathead River Basin Environmental Study, a five-year effort to look at impacts of development on the river basin. In cooperation with EPA, the AQB investigated baseline air quality in the region and projected the impact of development. A study of the potential effect of Cabin Creek coal development in Canada showed that the air above both the North Fork of the Flathead and Glacier National Park would exceed PSD increments for TSP and SO_2.

Ramsay

Fluorides and particulates from Stauffer Chemical's elemental phosphorus plant create most of Ramsay's air pollution. Particulate levels have remained well below the federal standards for the past six years. Fluoride concentrations, however, violated then-existing state ambient air quality guidelines at many monitoring sites during 1976-1980. The AQB currently samples grass in the area during grazing season to check for violations of the forage standards. Violations of these standards occurred in 1982; Stauffer has begun a program to reduce its fluoride emissions.

Residential Wood Heating

There are economic, political and supply-related reasons for the recent dramatic increase in the use of wood for residential heating. Western Montana has followed this national trend. In Missoula, for example, the number of households depending upon wood as their primary heat source increased 611 percent between 1976 and 1979. Expected rate increases for electricity and natural gas and a plentiful supply of wood assure this increasing trend in western Montana for many years to come. Since wood is a renewable resource, it can reduce the nation's dependence on expensive and non-renewable fossil fuels. The proper management of forest lands can provide wood for fuel and simultaneously enhance wildlife habitat.

Though wood heating can save money, it has its drawbacks. Unquestionably, wood-burning devices become fire hazards when installed or operated incorrectly. Improper wood harvest can destroy wildlife habitat, increase soil erosion and degrade water quality. But the most significant drawback is air pollution. Wood-burning devices emit significant quantities of carbon monoxide, polycyclic organic matter and respirable particulates, all of which are potential health hazards. The pollution emitted varies considerably, depending on the type, moisture content and size of the wood, the combustion conditions, and the size and shape of the combustion chamber.

When compared to conventional heating fuels on a British thermal unit (Btu) basis, wood emits far more pollution. For example, a Brookhaven National Laboratory study found that a modern wood stove produces 500 times more carbon monoxide, twice as much particulate, and 750 times more hydrocarbons than a comparable oil furnace.

Communities in Montana facing air pollution problems from increased use of residential wood-burning devices include Missoula, Kalispell, Helena, Butte and, to a lesser extent, Bozeman. All these areas are located in valleys that typically experience temperature inversions. Wintertime inversions are of greatest concern due to their extended length, associated low wind speeds and increased residential wood-burning activity.

A 1981 survey of residential wood use for heating estimated that 34 percent of the homes in Helena, 32 percent in Bozeman, 27 percent in Great Falls, and 40 percent in Kalispell use wood for some or all of their heating. A 1980 survey showed 54 percent of the households in Missoula burned wood.

Studies in 1980 indicate that residential wood-burning devices in Missoula contributed approximately 55 percent of wintertime TSP and 75 percent of wintertime respirable particulate; residential wood-burning devices contributed 40 percent of wintertime CO emissions, while transportation sources contributed 60 percent.

The contribution from residential wood-burning devices of carcinogenic substances in Montana communities has yet to be determined. However, the Montana Air Pollution Study showed that winter ambient air in Missoula contained mutagenic agents at levels comparable to industrialized cities in New Jersey and Louisiana. With the exception of Billings, the five towns with the highest mutagen levels were located in western Montana. The highest levels of mutagens occurred in the winter months and the lowest levels in the summer months, as one would expect if the source of these substances was residential woodburning. The MAPS data support other studies that document emissions of mutagenic substances from residential wood-burning devices at a level several orders of magnitude greater than from conventional fuel devices.

Missoula Plan

Missoula's efforts to mitigate the impacts of residential wood-burning are being closely monitored by other communities faced with similar problems.

To deal with the acute problem of high particulate levels, the Missoula City-County Air Pollution Control Board Air Quality Unit revised its "Air Stagnation Plan" in 1981. The plan sets "alert" and "warning" TSP levels; either requests or requires people to stop using wood-burning devices at the appropriate TSP reading; and advises the public of the health risks. The Air Quality Unit initiated a massive public education campaign in Missoula in the fall of 1981. The program included:

1) Public service announcements on local TV and radio stations;
2) Paid advertisements;
3) Several pamphlets outlining the health risks of wood-burning, correct burning procedures and details of the air stagnation plan;
4) A "Clean Air Week" that included an information booth, a panel discussion and intense publicity;
5) A speaker's bureau to give talks on Missoula's air pollution problems;
6) An air pollution education package for grades one through eight;
7) An air pollution telephone hotline with up-to-date information on air quality in Montana; and
8) Air quality status signs at several busy areas in the city.

New Source Performance Standards

The Air Stagnation Plan represents a temporary measure to curb pollution levels; it doesn't reduce the emission potential. The Missoula Air Pollution Control Board is now considering the establishment of a New Source Performance Standard (NSPS) for new purchases of wood-burning devices. The residential wood-burning citizen's committee recommended a 20 lbs/ton limitation on all residential wood-burning devices purchased after a certain date. The Missoula Air Quality Unit recommended a NSPS of 10 lbs/ton applied only to the installation of residential wood-burning devices in new construction. It believed the citizen's committee proposal would create significant enforcement problems. Steffel analyzed the two proposals in 1981, as well as an alternative (a NSPS of 10

lbs/ton to be applied to all wood-burning devices installed after a particular date). Based on the assumptions used in his analysis, only his proposal would result in a decrease in particulate emissions. But low-emission stoves have not been widely accepted and they are more expensive than conventional wood stoves.

Given the probable rise in future fossil fuel costs, problems associated with wood burning for residential heat will intensify. In Missoula, researchers have documented some adverse health effects of particulate emissions from residential wood-burning devices. Other potential effects, such as an increase in lung cancer, would not be noticeable for years. As residential wood-burning devices contribute more pollutants within an airshed, industrial growth will be limited. Any one mitigation effort, enacted separately, cannot solve the intensifying problem of pollution from wood-burning devices. However, the combined action of the stagnation plan, massive public education, and new source performance standards may reduce the problem significantly. Given citizen cooperation in curtailing the problem, along with technological innovation in low emission devices, perhaps Montana communities won't be forced to take more drastic action to protect their air.

Acid Precipitation

Acid precipitation, both snow and rain, is a natural phenomenon resulting from the reaction of certain air pollutants with atmospheric moisture in the presence of sunlight. Although contaminants from natural sources such as volcanic gases and particles have always caused some acid precipitation, the problem has become far more extensive because of human activities. The burning of fossil fuels for electric power, smelters and internal combustion engines has dramatically increased the emission of nitrogen and sulfur oxides - the primary precursors of acid precipitation.

Acid precipitation generally has been associated with the industrialized sections of the U. S., but recent monitoring has shown it is a common phenomenon in urban areas of the western states.

Western acid precipitation tends to be equal proportions of sulfuric and nitric acids, while higher sulfuric acid levels are characteristic of eastern acid rain. Automobile exhaust, a major source of nitrogen oxides, is thought to contribute significantly to acid precipitation in the west.

Acid precipitation has been partially linked to tall smoke stacks built in the 1970s to eliminate local air pollution problems. The tall stacks inject the pollutants high into the atmosphere where they remain for long periods and are transported up to thousands of miles. What was once a local problem has become regional and even global. The time the pollutants remain in the atmosphere affects the formation of sulfate and nitrate particulates, which then combine with water vapor to form the acids.

The acidity or alkalinity of precipitation is measured in pH units. A pH value of 7.0 indicates a neutral condition, while values greater than 7 are alkaline, and values less than 7 are acid. Under usual conditions, natural precipitation has about a 5.7 pH. Thus acid precipitation is generally defined as only that precipitation with lower than a 5.7 pH value.

The damaging effects of acid precipitation are largely dependent on characteristics of the watershed. For example, recently glaciated areas with exposed granitic bedrock and shallow soils generally have low capacity to buffer the acid effects on such factors as the solubility and mobility of soil nutrients, and the toxicity of certain substances that affect plants, animals, and microorganisms. Lakes and streams in these areas are especially vulnerable to pH changes and fish populations are ultimately affected.

The effects of acid precipitation on crops and forests are not well understood. Most effects probably occur over many years as the watershed's buffering capacity diminishes. Long-term, cumulative impacts on crops, soils and forests can occur so slowly that initial changes can not be detected except through long-term monitoring.

The northcentral Region of the State Agricultural Experiment Stations organized the National Atmospheric Deposition Program (NADP) in the late 1970s to address the effects of atmospheric deposition on agriculture, forest, rangelands and freshwater streams and lakes. NADP has established a nationwide network of 60 monitoring stations. The Environmental Protection Agency, the Department of the Interior, the Department of Commerce, and other state and federal agencies support the NADP programs.

NADP sampling stations in Montana are located at Glacier National Park and the town of Poplar on the Fort Peck Indian Reservation. There are also NADP stations at Yellowstone National Park in Wyoming, Craters of the Moon National Monument and Coeur d'Alene in Idaho, and Theodore Roosevelt National Park in North Dakota.

The table below lists the existing pH data for precipitation in Montana and nearby NADP sites. The values range from 4.2 to 9.0, but no trends can be

Precipitation pH Data for Montana

Site	Year	Mean pH	Range	Type of Measurement	Source
Craters of the Moon NM	1980	5.924		weighted annual average, 4 months	NADP 1981
Glacier NP	1980	5.262		weighted annual average, 7 months	NADP 1981
Yellowstone NP	1980	5.173		weighted annual average, 6 months	NADP 1981
Twin Bridges	1980	5.869	5.1-6.5	13 events	USGS 1981a
Helena-K	1980	5.65	4.7-7.6	14 events	USGS 1981a
Helena-S	1981	4.931	4.6-5.1	13 weeks	USGS 1982
Park City	1980	6.767	5.0-9.0	12 events	USGS 1981a
Missoula	1980	6.155	4.0-7.7	11 events	USGS 1981b
Kalispell	1980	5.62	4.6-6.8	5 events	USGS 1981b
Clancy	1981	4.638	4.4-5.1	13 weeks	USGS 1982
Gibson Dam	1981	5.225	4.2-6.8	28 weeks	USGS 1982

proven because of the short monitoring period. The only data that seem to indicate a change are for Glacier National Park. Between 1972 and 1976, the mean pH of 33 samples from Glacier was 5.78 with a range of 2.6 to 7.1. Average values for 1980 showed a decrease of .52 pH units.

For the past two winters, the Soil Conservation Service (SCS) has been measuring the snow pH levels at several testing sites to determine base pH for various mountain ranges across the state and to evaluate conditions that may be created by any future major volcanic eruptions. Low pH snowfalls between 4.0 and 5.0 were consistently observed in the Big Hole and Bitterroot headwaters and in portions of the upper Clark Fork, Beaverhead and Madison river drainages. Also, in the more southern drainage basins, the pH values appeared to decrease through the winter.

In conjunction with the SCS surveys, Dr. Gordon Pagenkopf at Montana State University has been examining snow core samples. Trace element analysis of the snow cores is planned to see if the sources of acid deposition can be identified.

During 1982, the Montana Department of Fish, Wildlife and Parks surveyed alpine lakes in the West Pioneer and southern Bitterroot Mountains. These lakes are within the zone identified during the SCS snow survey as receiving acid deposition; they were chosen in part because the U.S. Forest Service had monitored these lakes in 1971 and 1973.

Of twenty lakes surveyed, surface water pH and alkalinity (as $CaCO_3$) had decreased in 16, and conductivity had increased in 12. The lowest surface water pH observed was 5.20 and several lakes had decreased more than one pH unit. Both studies were conducted during daylight hours and from mid to late summer. It is unlikely that diurnal or seasonal variations would account for the changes observed. It appears that these lakes have been changed by acid deposition.

While the sources of Montana's acid precipitation are not known for certain, there are some existing and planned facilities that may affect Montana. The Creston Generating Station in Washington, a coal dryer associated with the Cabin Creek Coal Mine in

British Columbia, and the Poplar River Power Plant in Saskatchewan all have the potential to affect acid precipitation in Montana. The Cabin Creek and Popular River projects are discussed in the Canada/Montana section.

The Creston Generating Station, west of Spokane, Washington, will supply 2,280 megawatts of electricity from four 570-MW units. The maximum SO2 emission is estimated at 19,970 tons per year, after 86.5 percent SO_2 removal. The largest pH changes are expected within 10 kilometers of the plant. Modeling has predicted a 5.5 pH within 100 km downwind of the plant. The emissions from the facility are not expected to impact Montana, but they possibly could.

There are no studies that deal with Montana's contribution to the acid precipitation problem in or outside of Montana. Point sources in Montana emit more than 80,000 tons of SO_2 per year and more than 18,000 tons of NO_2 per year. Major SO_2 sources are the oil refineries in the Billings area, the ASARCO lead smelter in East Helena, Colstrip Units 1 and 2, and the Anaconda Aluminum smelter in Columbia Falls. Area sources contribute 37,300 tons of NO_2 per year. These sources undoubtedly affect the acidity of local precipitation and probably contribute to regional acid precipitation. The development of coal in eastern Montana will also significantly increase Montana's contribution to acid rain.

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SURFACE WATER

Abundant, clean water is one of Montana's most valuable resources. Although this water is not equally distributed over the state, most areas have adequate supplies of relatively high quality water. To protect and maintain this resource in the face of multiple and often conflicting demands is a significant challenge and a responsibility of all Montanans.

The primary surface water quality problems in Montana are depletion or dewatering of streams, and non-point source pollution, or pollution originating from such land uses as agriculture, forestry, mining and construction. Substantial progress has been made in controlling pollutants that originate at point sources, such as municipal and industrial wastewater effluents. Point sources may receive end-of-the-pipe treatment to prevent harmful discharges into the water, but management of non-point sources requires a modification of land management practices.

Non-point Sources

Non-point source pollution arises from improper land management practices enhanced by natural erosion. Approximately 4,000 miles of streams in Montana are affected by this pollution. Typical problems associated with non-point source pollution are: dewatering, sediment and salinity from agriculture; sediment, heavy metals and acid mine drainage from mining; sediment from forest practices; and sediment from natural erosion. Agriculture is the largest cause of non-point source pollution in Montana.

Section 208 of the 1972 Federal Water Pollution Control Act requires states to: "(i) Identify, if appropriate, agriculturally and silviculturally related non-point sources of pollution, including runoff from manure disposal areas, and from land used for

livestock and crop production and (ii) set forth procedures and methods including land use requirements to control, to the extent feasible, such sources." The Water Quality Bureau of the Montana Department of Health and Environmental Sciences completed an inventory of non-point source pollution problems in 1979. However, federal funds for this "208" program have been eliminated and the 1983 Montana Legislature provided only 26 percent of the general funds requested for a statewide non-point source water quality management program; hence, efforts to implement the necessary controls have been substantially reduced.

Mining

Mining activities have degraded nearly every major drainage in western and central Montana, with most of the problems stemming from early mining activities before environmental regulations were established. Mining degrades water quality in three principal ways: acid mine drainage; erosion and sedimentation; and heavy metal toxicity.

According to Ingman and Bahls, acid mine drainage usually results when: "...previously unexposed material, in the form of mine tailings, comes in contact with oxygen and water. If metal sulfide compounds such as pyrite (FeS) are present, oxidation in the presence of water converts sulfide to sulfate and releases acid, ferrous ion and sulfate." Acid mine waters can directly kill aquatic life. Indirectly, acid water increases the solubility and toxicity of other chemical constituents in the water. The acid dissolves ores laden with heavy metals that are often (even in minute concentrations) fatal to aquatic life. Acid mine drainage also poses a threat to humans and to domestic water supplies.

The most common water quality impact from mining activity is the sedimentation in streams from increased erosion. The principal culprits are mine dumps, tailings piles, settling ponds and access roads. Like acid mine drainage, increased sedimentation can harm aquatic resources in many ways. Schmidt (1978) conducted an assessment of water quality impacts from mining in the statewide 208 area. He identified the upper Clark Fork, Beaverhead, and upper Missouri river drainages as those most affected by mining in the non-designated 208 areas. The major mining water quality problems follow:

Problem Type	% Of Total Problems
Mine drainage	17
Tailings and waste dump erosion	34
Placer workings	35
Sand and gravel mining	12
Roads and ground disturbance	2

By virtue of sheer numbers, placer mines cause the state's most critical mineral-related water quality problems. The placer mines cause sediment problems and destroy riparian habitat. Schmidt (1978) found placer mining had its greatest impact in Beaverhead, Madison, Lewis and Clark, Powell, Broadwater, Missoula and Mineral counties. The placer operations are difficult to monitor for water quality violations due to their portability and large numbers. Two recent state actions are attempts to remedy the water quality problems resulting from placer operations: the WQB established a general permits program to expedite the permitting process and encourage compliance with water quality regulations; and the WQB and Department of State Lands agreed to conduct joint field inspections, educate miners concerning water quality laws and regulations, and publish a handbook on how to construct proper settling ponds.

Sand and gravel operations affect water quality through erosion and sedimentation. Major streams impacted by sand and gravel operations include the Bitterroot, Clark Fork, Teton and Sun rivers.

Abandoned Mines

Many of the mining impacts to water quality stem from inactive mines. The Department of State Lands' Abandoned Mine Land Program, which is funded by the U. S. Office of Surface Mining, is currently the main mechanism to reclaim inactive mines that degrade water quality. The table below lists the projects on the AML's master list considered to be critical water quality problems. Unfortunately, funding for reclaiming these projects is uncertain.

Key Abandoned Mines

Site	County	Expected Reclamation Procedures
Alta	Jefferson	Elimination of hazardous mine tailings and acid mine drainage
Bannack	Beaverhead	Elimination of hazardous shafts, adits and mine tailings
Colorado Tailings	Silver Bow	Elimination of hazardous mill tailings causing extensive pollution to Silver Bow Creek
Elkhorn	Beaverhead	Elimination of hazardous mill tailings polluting the headwaters of the Wise River, stabilize hazardous mill structure, close open adits and shafts
Lewis Coulee	Cascade	Complete work to eliminate acid mine flooding from abandoned coal mines
McLaren Tailings	Park	Elimination of hazardous mill tailings causing extensive pollution to Soda Butte Creek into Yellowstone Park

Source: DSL

Forest Practices

Sedimentation is the major water quality problem associated with logging activities. This sedimentation is principally caused by accelerated erosion due to road construction. Increased sediment in a stream seriously affects fish populations, degrades drinking water and impairs recreational activities. Poor forestry practices can also alter flow regimes and channel morphology, increase nutrient loads and introduce such harmful chemicals as pesticides.

The 208 report on the assessment of non-point source pollution on state and private lands identified several watersheds adversely impacted by logging. Most severely degraded were the Fisher River, Shields River, Fish Creek (tributary to the Clark Fork River), Thompson River, Tobacco River, and Smith River. The report also identified areas of potential impact: Blackfoot River, Yellowstone River, Clearwater River, Lolo Creek, middle and upper Clark Fork River, upper Swan River, and the Little Blackfoot.

A number of laws, regulations and guidelines cover forestry practices and water quality. Most of the federal laws deal with flood control, public water supplies or forestry management. The Department of State Lands Forestry Division and the Department of Health and Environmental Sciences are the major state agencies responsible for administering state laws relevant to water quality and forest land management. At the local level, conservation districts administer regulations and guidelines.

The state has little authority for requiring best management practices on private lands. To mitigate and prevent degradation of water quality from logging, the WQB contracted with the Department of State Lands to conduct an educational program with small private owners. The WQB also designated the U. S. Forest Service as the agency responsible for managing non-point source pollution on lands under its jurisdiction.

Agriculture

Agriculture comprises about 75 percent of the land use in Montana and 99 percent of the land use in the eastern plains section of Montana. Water quality problems associated with agricultural practices on Montana's dry, alkaline and erosive lands include stream dewatering, sedimentation from soil erosion, and natural salinity and nutrient enrichment compounded by irrigation return flows and saline seep. Ironically, these are also significant problems for the state's agricultural industry.

In 1973, Governor Thomas Judge assessed the problem of saline seep in Montana: "The extent of saline-alkali damage and its adverse effect on the economy and ecology of this state has created a problem of near-crisis proportions, and we cannot allow this to continue." Unfortunately, saline seep has continued to take its toll on the waters, soils and crops of eastern Montana. The widely accepted dryland farming practice of summer fallowing every other year is the prime cause of saline seep. The problem arises from "... a permeable soil mantle over impermeable strata, a highly soluble salt content in underlying material and a greater supply of moisture than the soil can store, resulting in excess water being discharged into adjacent soil areas or into groundwater." Saline seep typically occurs in, but is not restricted to, thin glacial tills that are very permeable and laden with natural soluble salts. Glacial tills make up much of eastern Montana's plains. In the crop-fallow system, large tracts of land remain unvegetated for one or two years. Excess water percolates through the soil to impermeable strata and forms a "perched" water table.

Salt-laden waters contain high levels of dissolved solids, primarily sodium, magnesium, sulfate, calcium and chloride. Saline waters may also contain high concentrations of nitrates and trace elements, including aluminum, iron, strontium and selenium. Only salt-tolerant plants can grow in saline soils, and valuable cropland is destroyed. The saline waters also enter surface water and groundwater, eventually affecting humans, livestock, fish and wildlife and irrigated crops.

Estimates vary for the damage caused by saline seep in Montana. Previous estimates of 140,000 to 200,000 acres affected by saline seep are now considered to be low. The statewide 208 report on agriculture estimated that some 1,400 miles of Montana streams are being degraded by saline seep; the affected river basins include the Marias, middle Missouri, lower Missouri, Musselshell, middle Yellowstone, and lower Yellowstone.

Researchers have identified many potential solutions for saline seep. The Montana Bureau of Mines and Geology recently investigated the use of subsurface drains to reclaim areas damaged by saline seep. But it found the method inefficient for use in tight Montana soils, as well as potentially damaging to the area's ecology. More practical remedies include intensive cropping, the use of deep-rooted plants such as alfalfa to absorb excess water, and establishing a sod cover over the affected area with native or range grasses. In the long run, such corrective measures are cost-effective for the farmer who faces deflated land values, lost crop income and higher operating costs due to saline seep.

Dewatering by agriculture also causes severe non-point source pollution in the state. Irrigation accounts for 95 percent of the water withdrawn in Montana.

County conservation districts have estimated that

more than 800 miles of Montana streams experience severe water depletion through irrigation withdrawals. The dewatering reduces the stream's dilution capacity (thus increasing the concentration of pollutants, increasing water temperatures and depleting oxygen in the water). Fish and aquatic insect communities can be severely affected.

The WQB can apply for instream flow reservations to protect the areas threatened by dewatering. It received such a reservation for the Yellowstone River in 1978.

The WQB relies heavily on county soil and water conservation districts to control pollution from agriculture. Each district is administered by a board of five rancher-farmers. The districts promote a non-regulatory, education/incentive approach to solve problems. In one example of cooperation, a consortium of 11 county conservation districts in northcentral Montana formed the Triangle Conservation District (TCD). The TCD provides technical field assistance to landowners to correct and reclaim saline seep areas on a farm-by-farm basis. Best management practices are encouraged, but not required. The districts have regulatory power under the Natural Streambed and Land Preservation Act of 1975 to protect natural streams and prevent soil erosion and sedimentation. The districts must review for approval any proposed activity that would alter a perennial stream.

Point Sources

Under the Montana Pollutant Discharge Elimination System, the WQB authorizes and controls point source discharges to state waters through permits. The program has resulted in significant improvements in water quality; degradation from point sources has decreased from more than 1,000 miles in 1960 to fewer than 100 miles in 1980. However, the permits issued under the system continue to increase, principally due to increased energy development. In the past, the state's water quality program emphasized point source problems; emphasis should now shift to problems of non-point sources.

Through federal grants to fund the construction of water treatment facilities, water quality problems are being resolved in Plains, Three Forks, Helena, Kalispell, Missoula, Bozeman and other communities. Most of the municipal wastewater treatment plants are presently upgrading their facilities to clean up their effluents.

Ammonia

Municipal sewage treatment plants usually discharge effluents containing ammonia. The toxicity of ammonia differs for various aquatic organisms and depends on the pH, temperature and other environmental factors of the receiving waters. In 1980, the WQB identified 36 municipalities and stream segments having potential ammonia problems. But upon further study, the WQB eliminated 30 of these segments with six still having potential unresolved ammonia problems. Removing ammonia from wastewater is expensive, so the environmental benefits and economic costs of advanced wastewater treatment need to be balanced.

Ammonia Problem Areas

Municipality	Receiving Water
Lewistown	Big Spring Creek
Kalispell	Ashley Creek
Ronan	Crow Creek
Helena	Prickly Pear Creek
Browning	Depot Creek-Willow Creek
Billings (Yegan Drain)	Yellowstone River

Coal Mines

Coal mining has the potential to alter groundwater flows and change water quality. Mine spoils replaced in mined-out coal beds contain leachable salts and minerals that may increase the dissolved solids in groundwater and surface waters. Vegetation removal increases the possibility of erosion and sedimentation. Other associated problems are acid mine drainage and the dewatering of aquifers. These problems threaten the other beneficial uses of water for wildlife, humans, aquatic life and livestock.

Coal mining has affected water quality in Montana streams through all these avenues. Schmidt (1978) identified the Sand Coulee drainage in Cascade County as the most significant water quality problem related to coal mining. Nine abandoned mines discharge acidic waters that affect about 20 miles of stream. Researchers noted that the Decker Mine has dewatered aquifers and that groundwater quality has deteriorated at both the Decker and Colstrip mines.

With the expansion of coal mining in this state, the potential for associated water quality problems will increase. The Department of Natural Resources and

Conservation conducted nine studies on the potential impact on water quality from increased coal development. At high levels of energy development, levels of salt in the Yellowstone and Bighorn river basins would increase enough to affect plants, animals and use by man. Any future development on the Tongue and Powder rivers could cause harmful increases in salinity. The Fort Union coal region serves as an important groundwater reserve for domestic, stock and wildlife use. Coal-fired power plants and coal gasification/liquifaction plants can potentially affect water even more than can coal mines. Additional diversions of waters for these facilities in semi-arid eastern Montana can preclude other beneficial uses of water because of decreased flows and increased pollution.

Planned coal development in Canada has created concern over potential impact in the Flathead River and Flathead Lake area. Sage Creek Coal Company plans an open pit mine that will process 2.5 million tons per year near the North Fork Flathead River. The coal mining could increase sedimentation and nutrient enrichment, and degrade the North Fork as well as the Flathead River and Flathead Lake. Another concern is the four 300-MW coal-fired power plants proposed near Coronach, Saskatchewan. The possibility of reduced flows and increased total dissolved solids in the East Poplar River are the major concerns. The projects might also introduce toxic and harmful substances into the river. These effects threaten, among other things, irrigation and domestic uses, fish populations and crop yields. The U. S. Geological Survey is monitoring the effects of the development on water quality as the second of the four units nears completion. The agency has noted a reduced flow in the Poplar, but no other water quality degradation. (See Canada/Montana Relations Chapter)

Oil and Gas

All stages of oil and gas development can adversely affect water quality. In the exploration stage, vehicle activity and improper disposal of shothole cuttings can increase erosion and degrade surface water quality. Seismic shocks can alter groundwater flows and quality. In the development and production stages, when extensive drilling and associated construction occurs, potential adverse effects include: oil or toxic fluid spills from pipeline breaks, storage facilities, tankers and refineries; inadequate lining of reserve pits and the interception of water brines or oil by drilling; release of drilling fluids from mud pits causing erosion and contamination of streams; increased sediment from construction activity; and illegal dumping of brines and waste oil. In the abandonment and reclamation stages, common water quality problems include: improperly plugged holes that can cause the intermixing of aquifer fluids and discharge into surface waters; and inadequate well casings that corrode and allow inter-aquifer transfer of water. Gas production can also cause the inter-aquifer transfer of water, where waters of low quality may degrade high quality waters.

Researchers are just beginning to document the impacts of increased oil and gas activity on water quality in Montana. Preliminary investigations indicate that the improper handling of produced water and saline drilling fluids, such as using an inadequate reserve pit lining, present the greatest threat to surface water and groundwater quality. Several impacts, mostly localized, have occurred in eastern Montana counties. The majority of complaints by landowners concern water quality problems: improper water discharges, contamination of water supply or seismic holes improperly plugged or not plugged at all. In addition, Montana has experienced oil spills such as a ruptured Conoco pipeline that spilled thousands of gallons of gasoline into LaValle Creek outside of Missoula. In the nation's largest land oil spill, a pipeline break north of Bryon, Wyoming released oil that eventually drained into the Yellowtail Reservoir. Both spills occurred in the summer of 1982. In general, oil and gas activity in mountains such as those in the Overthrust Belt poses a greater threat to water quality than does activity in the foothills and plains.

River Basins

The following section briefly describes the major quality problems by river basin as described in the 305(b) report by the WQB; 216 areas have been identified with apparent or potential water quality problems.

Montana River Basins

Source: DHES

Kootenai

The waters of the Kootenai River Basin are generally of excellent quality, but they are more sensitive to acid mine drainage and heavy metal pollution than are waters elsewhere in Montana. Potential water quality problems include sediment and metals pollution from copper exploration, mining and milling near Troy in the Lake Creek drainage and the proposed Kootenai Falls hydroelectric facility. Extensive logging within the basin is a source of moderate to severe erosion problems. Increased sediment and flows from forest practices and some other sources have caused degradation of the Fisher River and Keeler Creek in the Lake Creek drainage.

Upper Clark Fork

Water quality in the upper Clark Fork River basin varies from some of the state's worst in Silver Bow Creek to the blue ribbon trout waters of Rock Creek. The development of timber and mineral resources in the mountain ranges of the basin has caused sedimentation, toxic metals and acid mine drainage problems. The 208 mining study showed that the Flint Creek drainage basin had the most hard-rock operating permits in the state and the most identified mining-related problems, excluding those associated with placer mining. Two streams in the drainage, the North Fork of Douglas Creek and another Douglas Creek in the Philipsburg area, were identified as severely stressed due to contact with tailings dumps containing high metal concentrations. The Flint Creek Range is definitely an area of future development of phosphate, oil and gas reserves. Other areas where active and inactive mining and other activities have impacted aquatic life and recreation in the upper Clark Fork River basin are the Blackfoot River to Lincoln, Brock Creek, the Clark Fork River from Warm Springs to Garrison, Dunkelburg Creek, Elk Creek, Gold Creek, Silver Bow Creek and Union Creek.

One of the state's most severe water quality problems exists in Silver Bow Creek, which is degraded by the municipal discharge from the Butte wastewater treatment plant, industrial discharges, storm drainage and seepage from over 2 million cubic yards of old

mine tailings in the stream's floodplain. The EPA is considering Silver Bow Creek as a hazardous waste site eligible for Superfund clean-up funds.

Streams impacted by logging include Fish Creek and the Bitterroot and Blackfoot Rivers.

Lower Clark Fork

As with the upper Clark Fork River basin, water quality in the lower Clark Fork basin varies. Irrigation diversions and return flows in the concentrated agricultural areas have caused elevated temperatures and increased suspended solids in some basin streams. Highly erosive glacial soils also contribute to non-point source pollution. These factors have resulted in poor water quality in Crow Creek, Mission Creek and Post Creek. Dewatering for agricultural use is the most serious adverse impact on the Bitterroot River. The water quality of the Clark Fork below Alberton is good to excellent.

St. Mary

The quality of waters in the basin, 70 percent of which is in Glacier National Park, is generally excellent. One principal segment of the basin, the Belly River, is confined entirely to Glacier National Park and all water is nearly pristine. Water of the St. Mary's River basin is also of excellent quality, with the exception of Swiftcurrent Creek, where high levels of sediment and coliform bacteria from grazing and construction have degraded water quality.

Flathead

Generally, the Flathead River basin contains pristine waters suitable for all beneficial uses following minimal treatment. Concentrations of suspended sediment and dissolved chemicals are among the lowest in Montana streams. Some degradation does occur from land use, livestock, domestic waste and large hydroelectric dams. Foresty and agriculture are the primary activities that impact water quality.

Water quality of the North Fork of the Flathead could be degraded significantly from future coal mining in Canada and oil exploration activities south of the border. Livestock grazing along Ashley Creek has caused streambank deterioration, sedimentation and excessive coliform concentrations, damaging aquatic resources and recreation. Improved wastewater treatment at Kalispell will improve water quality in Ashley Creek. Reservoir releases from the Hungry Horse Dam on the Flathead River have created thermal and flow fluctuation problems that impact the fish downstream. Excessive irrigation combined with other non-point sources on the Whitefish and Stillwater river drainages have significantly degraded these streams.

The high quality of Flathead Lake is threatened by land use practices and wastewater discharges within the basin, since the lake traps nutrients and sediments discharged into it. These nutrients, especially phosphorus, contribute to the aging (eutrophication) of Flathead Lake. Because of its unique scenic and recreational value, special efforts are necessary to protect this resource.

Upper Missouri

The upper Missouri River basin in southwest Montana and northwest Yellowstone Park is drained by seven major rivers: the Madison, Gallatin, Jefferson, Beaverhead, Red Rock, Big Hole and Boulder rivers. Surface and groundwater quality in the headwaters is generally excellent. Within the basin are the most popular and productive cold water fisheries in America. But the water quality decreases downstream. Degradation stems from a conglomeration of problems such as sediment, temperature, dewatering, nutrients, coliform bacteria, eutrophication and acid mine drainage. Streambed erosion and sediment deposition typically degrade water below the basin's numerous reservoirs.

Beaverhead River

The major water quality problems in the Beaverhead River are: sediment and metals from Grasshopper Creek due to grazing and mining; increased sediment below Clark Canyon Dam due to stream erosion; and dewatering from agricultural activity. Many areas of the drainage have highly erosive soils. Schmidt (1978) identified six mining-related water quality problems and two drainages adversely affected by placer mining in the basin. There is a strong potential for future mining development in the basin.

Ruby River

The Ruby River suffers from high turbidity levels due to easily erodible soils and poor land management practices, such as overgrazing.

Big Hole River

The water of the Big Hole River, a valuable blue ribbon fishery, is generally of excellent quality. However, increased temperature and sediment loads due to irrigation withdrawals and returns have damaged some stream sections of the drainage and have the potential for serious degradation of the fishery.

Jefferson River

Elevated temperatures that could damage salmonids and associated aquatic life have been recorded on the Jefferson, caused primarily by agricultural activity. Moderate sediment and turbidity levels occur in the Jefferson from irrigation return flows and natural and channel erosion.

Boulder River

Acid mine drainage has severely degraded the waters in the Boulder River drainage. The degradation results mainly from acid, metals, and sediments from High Ore and Cataract creeks, areas of intense past mining. Pederson (1977) assessed the mining impacts of water quality in the Northern Boulder Batholith and discovered that 56 of the 66 stream sampling stations had recorded metal concentrations exceeding those known to cause an impact to aquatic organisms.

Red Rock River

Several soil groups are highly erodible in the Red Rock River drainage, which cause sediment pollution aggravated by overgrazing and forestry activity.

Madison River

Sediment in the West Fork of the Madison River, due to poor land use practices, is one water quality problem on the Madison, a nationally prominent blue ribbon trout stream. But the most serious problem is elevated temperatures considered harmful to salmonids and associated aquatic life below Ennis Lake, due to solar heating of the relatively shallow lake waters. One fish kill occurred below Ennis Lake in 1979. The Blue Ribbon 208 group is now conducting a detailed investigation of the problem.

Gallatin River

The Gallatin River has pristine headwaters but concentrations of solids and nutrients increase downstream. Waters of the West Gallatin River are generally high quality, while waters of the East Gallatin have been degraded. Erodible streambanks, extensive agricultural activity, waste disposal and discharges from the Bozeman sewage treatment plant represent the major factors contributing to increased sediment, nutrients and coliform bacteria in the East Gallatin River. However, the new wastewater treatment plant at Bozeman has abolished toxic ammonia problems in the river. The West Gallatin River is also degraded by sediment, mainly due to erodible streambanks, grazing and agricultural activity, although not to the extent of the East Gallatin.

Missouri-Sun-Smith

Water quality in the Missouri-Sun-Smith River basin varies considerably, from the best in the state to the worst. Several industrial and municipal sources discharge into the basin's waters. The basin also has 17 reservoirs and run-of-the-river impoundments, each with at least 1,000 acre-feet of storage. Two severe water quality problems occur on Muddy Creek and Prickly Pear Creek.

Dearborn River

Some sections of the Dearborn River are degraded from high levels of sediments due to agricultural activity.

Smith River

The waters of the Smith River are generally of high quality, although high sediment levels and increased temperatures due to poor land use practices (logging and agriculture) occur in sections of the river.

Sun River

Muddy Creek, a tributary of the Sun River, deposits a tremendous sediment load—200,000 tons of eroded soil per year—into the river. Unstable soils combined with high flows caused by excess irrigation water being returned to Muddy Creek are the major factors leading to this load. This creates Montana's worst water quality problem. The Soil Conservation Service (SCS) has initiated programs to correct the problem by promoting water conservation practices and the rerouting of water to reduce the flows into Muddy Creek. Since these efforts began three years ago, researchers have noted decreased flows, but much more work needs to be done and funding is crucial. The Bureau of Reclamation has been investigating constructing a $19 million dam at Power (subject to Congressional approval) to collect silt and stabilize flows.

Prickly Pear Creek

Prickly Pear Creek has suffered many abuses in the past from intensive mining, dewatering for irrigation,

industrial and municipal discharges, and channelization from construction of highways and railroads. The Spring Creek drainage, dubbed "The Black Sheep of the Headwaters Family," remains a significant source of acid, heavy metals and sediment in the Prickly Pear. These pollutants from the oxidized tailings of mines abandoned almost 100 years ago continue to affect aquatic life downstream. The debilitating effect of discharges from the ASARCO Smelter has been greatly reduced in the past ten years, due to the introduction of a closed circuit system in 1975, and the operation of the smelter's dam to allow fish passage. Secondary wastewater treatment facilities in East Helena will significantly improve the quality of East Helena's sewage effluent. The Helena sewage treatment plant continues to damage the water quality of the creek, causing high levels of fecal coliform, bacteria, nutrients, turbidity and ammonia. The Department of Fish, Wildlife and Parks is working to solve the several dewatering problems in lower Prickly Pear Creek.

Belt Creek

Acid mine drainage from inactive mines severely degrades Carpenter Creek and the Dry Fork of Belt Creek. Seeps from nine inactive coal mines in the Sand Coulee Drainage near Belt cause acid waters that affect about 20 miles of stream. The Department of State Lands is attempting to reclaim the mines.

Marias

The water quality of the Marias and Teton rivers worsens as they flow eastward, due to increasing levels of sediments and salts. Water in the Dry Fork of the Marias is of poor quality due to high salt and sediment levels from natural sources and agricultural activity. Nearly all identified water quality problems on the Marias stem from irrigated agricultural operations. High nutrient and ammonia levels below the Browning wastewater treatment plant degrade the waters of Willow Creek. Petroleum activity is the likely source of phenols and sediment impacting the Spring Coulee tributary of the Marias. The Teton River is significantly degraded by the time it reaches the town of Collins, due to a combination of irrigation withdrawals and return flows, stream channelization, and geological effects as the water crosses the Colorado shale formation.

Middle Missouri

The middle Missouri River basin includes the area drained by the Missouri River from Fort Benton to the Fort Peck Dam. The high level of petroleum activity occurring in the basin has had little impact on water quality. The large deposits of coal in the southern and eastern parts of the basin might be a future water quality concern. Sediments and salts from irrigation returns, poor soil conservation practices, saline seep, overgrazing and natural erosion are the dominant water quality problems in the basin.

Arrow Creek carries heavy silt loads from natural and agricultural sources. Combined with high salinity levels, these inhibit aquatic life. High nutrient and ammonia levels caused by effluent from the Lewistown wastewater treatment plant damage aquatic resources and recreation in the Big Spring Creek and Judith River. Suspended solids and salts are high near the mouth of the Judith River, probably as a result of agriculture and natural sources. Sediment loads and salinity are also significant problems on the Wolf Creek tributary of the Judith River.

Musselshell

The quality of water in the Musselshell River is degraded primarily from natural causes, but also from logging, agriculture and past channelization. Some saline seeps occur as well.

Logging in the upper portion of the basin has caused increased sediment in various drainages, possibly damaging aquatic life. The Winnett wastewater treatment plant, combined with natural sources and agricultural activity, causes nutrient, ammonia and sediment problems on McDonald Creek and Box Elder Creek. The lower Musselshell carries excessive sediment, mainly due to Box Elder geology and topography and irrigation returns. Fisheries production, recreation, domestic water use, irrigation and reservoir storage are all affected by increased sediment loads.

Milk

Increased sediment and salt primarily caused by poor grazing and cropping practices, irrigation returns and saline seep significantly degrade the waters of the Milk River Basin. More than 12 municipal, several industrial and numerous agricultural sources discharge wastes into the basin's waters. The headwaters of the Milk in Glacier National Park are of excellent quality. Once the river reenters the U. S., the water quality deteriorates with increased sediments and salts. Streambank erosion and irrigation returns are the major contributors to this degradation. Leachates from past mining activity in the Little Rockies cause a heavy metal and pH problem in Peoples Creek. High sediment and salt levels remain the major water

quality problems on the lower reaches of the Milk River.

Lower Missouri

The lower Missouri River basin runs from the Fort Peck Reservoir to the Montana-North Dakota border. The basin waters are generally of only fair quality, being high in sodium and sulfates. It provides warm water habitat for aquatic life. Saline seep is rated as the most serious non-point source pollution problem, with poor quality irrigation flows rated second. The water of the Poplar River, particularly the East Fork, generally is of poor quality and sometimes is unsuitable for irrigation during summer months. Water of Big Muddy Creek and the Redwater River is of poor quality with high levels of total dissolved solids due to agricultural and natural sources. Aquatic resources, irrigation and recreation uses are impaired. The area contains vast deposits of coal and reserves of petroleum in its southern portion, and therefore might experience future impacts.

Upper Yellowstone

The upper Yellowstone River basin includes the Yellowstone River and all of its tributaries from the national park boundary to just below the Clarks Fork of the Yellowstone. Waters of the headwaters are of excellent quality (blue-ribbon trout waters), except for certain tributaries affected by acid mine drainage. However, as the waters flow eastward temperature, dissolved solids and suspended solids increase. The Clarks Fork of the Yellowstone is of poor to fair quality due to high turbidity and sediment loads. The major sources of these pollutants include natural erosion and poor land use practices. Elevated arsenic, fluoride and phosphorus levels, introduced by the thermal waters of Yellowstone National Park, occur in the upper Yellowstone. Much of the drainage contains highly unstable soils with high erosion potential.

Waters of the Stillwater River drainage are generally of good to excellent quality, except where past mining operations have caused acid mine drainage and heavy metal pollution in the headwaters. The McLaren Mine poses a historic problem where heavy metals and acidity have rendered Daisy Creek void of fish life for some distance downstream.

Sediment from irrigation activities increases loads to the Yellowstone as it flows eastward. The forestry 208 study also found logging activities cause increased runoff and sediment loads in several drainages of the basin.

Middle Yellowstone

The quality of water in the Middle Yellowstone River Basin declines as stream temperatures and suspended sediment loads increase. There is potential for increased degradation due to coal mining and other energy developments within the drainage.

Lower Yellowstone

The WQB describes water quality of the lower Yellowstone River basin in the following way: "With the exception of the Yellowstone River and one or two others, streams in the basin have naturally poor quality water because of high sediment loads and large concentrations of salts. One stream, the Powder River, has been described as 'a mile wide and an inch deep, too thick to drink and too thin to plow.' Soil groups in the basin have erosion potentials ranging from slight to severe."

The Powder River has elevated sediment and salinity due to natural erosion and agricultural activities. Waters of the Little Powder and the Powder river basins and Sunday Creek are of poor quality. Downstream from the Powder River, salinity and sediment levels increase due to saline seep, poor quality tributaries and irrigation.

Excessive sediment loading and high concentrations of salts have degraded streams in this basin. Naturally erodible soils, combined with agricultural activity, have created poor water quality in the Powder River and Little Powder River basins and Sunday Creek.

Little Missouri

Eighty percent of the land in this basin is grazing land. Water quality throughout the basin ranges from fair to poor. There is a heavy reliance on groundwater for stock and domestic supplies. Sediment from natural, agricultural and mining sources in tributaries degrade waters of the Little Missouri. High coliform bacteria levels are probably due to on-site waste disposal along Box Elder Creek and the Little Missouri River below Alzada. The Wibaux wastewater treatment plant and on-site waste disposal degrade waters on Beaver Creek.

Nondegradation Rules

The Montana Water Pollution Control Act established a nondegradation policy that requires:

> "That any state waters whose existing quality is higher than the established water quality standards be maintained at that high quality unless it has been affirmatively demonstrated to the Board that a change is justifiable as a result of necessary economic or social development and will not preclude present and anticipated uses of those waters."

The Board of Health and Environmental Sciences has approved regulations proposed by the WQB to implement this nondegradation policy. The procedures whereby a discharger can degrade Montana waters because of economically or socially necessary development remains a controversial issue.

Public Water Supplies

Montana has 1,896 public water supplies, 594 of which are community systems. Montana's drinking water is generally good in the west, and fair to poor in the east; the eastern groundwater supplies are generally high in total dissolved solids.

Groundwater systems comprise 95 percent of the state's public water supplies, but serve only 30 percent of the population. In 1982, the WQB identified 18 community groundwater systems that exceeded the maximum levels for fluoride; five for nitrates; two for arsenic; and two for selenium. Eastern Montana sources suffer from problems associated with dissolved solids, iron, manganese, hydrogen sulfide gas, sulfate and sodium.

Surface water systems comprise only 5 percent of the state's public water supplies but serve 70 percent of its population. Many of these systems provide only chlorination treatment and many of these same systems have experienced excesses of the maximum contaminant level for turbidity. Those community public water supplies that have exceeded the turbidity standard are Culbertson, Bozeman, Canyon Ferry, Devon, Tiber County Water District, Fort Peck, Rainbow Dam, Ryan Dam, Harlem, Helena, Neihart, Ronan and White Sulphur Springs. Algae blooms have also created taste, odor or color problems in some surface water supplies, such as at Helena and Butte.

Lakes

Pristine, high quality lakes abound in Montana. However, many Montana lakes have significant water quality problems. Unlike flowing rivers and streams, lakes do not have purging capacity for pollutants; they serve as a repository for innumerable natural and man-made pollutants. Generally, natural and non-point source pollutants, not point sources, degrade Montana's lakes.

The WQB is now completing a statewide inventory of water quality in Montana lakes. Previously, no systematic state program existed to assess the water quality of Montana lakes. In its 1982 305(b) report, the WQB identified 20 lakes where beneficial uses have been most significantly impaired by water quality problems. Many of these lakes have eutrophication problems—the accumulation of sediment on the lake bottom reducing lake depth and volume and high nutrient levels enhancing aquatic plant growth. This leads to nuisance algae blooms, seasonal oxygen depletion, stagnation and fish kills that damage the recreational and aesthetic aspects of the lake. Cultural eutrophication, the input of nutrients and sediments due to human activities, speeds up the natural eutrophication process. Ironically, eutrophic Georgetown Lake serves as one of the state's most popular and productive fisheries. Eutrophication, at various stages of development, threatens Flathead Lake. Methods of preventing nutrients from entering the lakes, such as better soil conservation practices and advanced water treatment, offer solutions to eutrophication problems.

Resources

Montana Dept. of Health and Environmental Quality, Water Quality Bureau, **Montana Water Quality 1982,** Helena, 1983; issue assessments of 208 planning reports, various dates.

Montana Dept. of Natural Resources and Conservation Water Resources Division, **Water Use in Montana,** Helena, 1975.

Montana Dept. of State Lands, **Montana's Abandoned Mine Land Reclamation Program,** Helena, 1982.

U.S. Environmental Protection Agency, **Final EIS: Impact of Canadian Power Plant and Flow Apportionment on the Poplar River Basin,** Washington, D.C., 1981.

WILDERNESS

United States wilderness policy has been one of strict protection and preservation. The Wilderness Act of 1964 states: "It is the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness."

Although the federal government is largely responsible for establishing and managing wilderness in Montana, state legislators, citizens and interested groups are keenly involved in wilderness issues. Wilderness represents a key component of Montana's environment.

Major Legislation

Three pieces of federal legislation provide the framework for the National Wilderness Preservation System. These are the Wilderness Act of 1964, the Federal Land Policy and Management Act of 1976, and the Wild and Scenic Rivers Act of 1968.

The Wilderness Act of 1964 (PL 88-577) established the National Wilderness Preservation System. Until that time, all wilderness and primitive areas had been located on Forest Service lands. All areas that had been classified as "wilderness," "wild" or "canoe" became wilderness areas. Within ten years all areas that had been classified as "primitive" had to be evaluated as potential wilderness. The act also directed the secretary of the interior to review the wilderness potential of all roadless areas of at least 5,000 acres in the national parks, monuments, wildlife refuges and game ranges. The act required the president to make a recommendation to Congress on each area; Congress retained sole authority to designate a wilderness area.

The Wilderness Act prohibited new road building and commercial enterprises in wilderness areas. The introduction of motorized equipment and vehicles was also prohibited, with the exception of those used prior to passage of the act. Mineral exploration and development were allowed, subject to regulation, through December 31, 1983, when all unclaimed and unleased minerals in wilderness areas were withdrawn from development. Livestock grazing, if established

before the act, may also continue. In 1976, Montana had seven wilderness areas: the Bob Marshall, Scapegoat, Selway-Bitterroot, Anaconda-Pintler, Cabinet Mountains, Mission Mountains, and Gates of the Mountains.

The Federal Land Policy and Management Act (FLPMA) of 1976 (PL 94-579) directed the Bureau of Land Management to manage its public lands for multiple use. The act directed the BLM to inventory all its lands, while section 603 specifically required the review of all roadless areas of 5,000 acres or more and roadless islands identified as having wilderness characteristics. The BLM would then recommend to the president areas suitable for wilderness. During the review, the Interior Department and the BLM must manage the areas so as not to impair their wilderness characteristics. However, mining, grazing and mineral leasing are allowed to continue without special regulation if the activity began before presidential approval of FLPMA.

The Wild and Scenic Rivers Act of 1968 (PL 90-542) established a system to preserve free-flowing rivers or valuable segments of rivers. These rivers possess outstanding scenic, recreational, geologic, fish and wildlife, cultural or similar values. Rivers included in the system are classified as "wild," "scenic," "recreational" or any combination of the three. Wild rivers are unpolluted and undammed, have primitive surroundings, and are accessible only by trail. Scenic rivers are undammed, have largely undeveloped shorelines, but are accessible by road. Recreational rivers are readily accessible by road or railroad, may have some development along their shorelines and may have undergone some impoundment or diversion.

The act gives the federal agency in charge of the river the authority to acquire, through condemnation, not more than 100 acres of river frontage per mile. Such condemnation is prohibited if more than 50 percent of the land along the river is already in federal or state ownership, or if the land is within the incorporated limits of a city or town. The managing agency is also allowed to purchase scenic easements to control land use along the river.

The 1968 act designated the first eight components of the Wild and Scenic Rivers System. Twenty-seven rivers or sections of rivers were designated as potential additions to the system, including in Montana the North, Middle, and South Forks of the Flathead River and the Missouri River.

The Federal Energy Regulatory Commission cannot license any new project directly affecting a component of the Wild and Scenic Rivers System. Land within one-quarter mile of the bank of any designated river may not be withdrawn from entry or sold. Federally owned minerals not already claimed or leased are withdrawn from appropriation.

Designations Since 1975

In 1976, the Montana Wilderness Study Act (MWSA) directed the U. S. Forest Service to study the wilderness potential of nine Montana areas. The Forest Service also evaluated all its identified roadless areas in its second Roadless Area Review and Evaluation (RARE II) and recommended areas for exclusion, for further planning, or for inclusion as wilderness. The Forest Service is making recommendations for the MWSA areas and other areas identified in each forest management plan. The Bureau of Land Management conducted its wilderness inventory and designated Wilderness Study Areas (WSA). The BLM will make recommendations on those areas after its studies are completed.

Eight new Montana wilderness areas have been added to the National Wilderness Preservation System since 1976. The Omnibus Forest and Refuge Wilderness Act (PL 94-557) established three: the Red Rocks Lakes, Medicine Lake and UL Bend National Wildlife Refuge Wildernesses. The other five areas are discussed below:

Welcome Creek

Welcome Creek became a wilderness area when the Endangered American Wilderness Act was signed in 1977. The area was initially included in the bill, but was dropped in June 1977. The House Interior and Insular Affairs Committee returned Welcome Creek to the bill with the stipulation that it become instant wilderness if the bill became law.

Absaroka-Beartooth

In 1978, the 920,000-acre Absaroka-Beartooth Wilderness combined the Absaroka and Beartooth Primitive Areas with roadless areas identified by the Forest Service to create a unified wilderness area. Wilderness designation precluded proposals for logging in the Cedar-Bassett area near Gardiner and a road from Big Timber to Cooke City. The proposed Stillwater platinum-paladium mining area, located near the northeast boundary, was excluded from the wilderness because of its rich concentration of strategic minerals.

Great Bear

The 293,000-acre Great Bear Wilderness, which joins Glacier National Park with the Bob Marshall Wilderness, was approved in late 1978.

Senator Lee Metcalf first introduced legislation for the Great Bear in 1975. The area was included as a study area in the 1976 Omnibus Wilderness Act, but by the time the Forest Service had concluded its study in 1976 there was opposition from timber, mining, and oil interests to wilderness designation. Reports in 1977 from the U.S. Geological Survey and the Bureau of Mines indicated good oil and gas potential in the eastern part of the proposed wilderness. Oil and gas interests were concerned that wilderness designation would prevent oil and gas exploration.

Members of the Montana congressional delegation did not sponsor the Great Bear Wilderness legislation. Instead, Senators Henry Jackson (D-Washington) and Clifford Hansen (R-Wyoming) and Representative Morris Udall (D-Arizona) introduced the bill "by request." The House and Senate deleted 13,300 acres from the area to allow for snowmobile use areas, a powerline corridor along U. S. Highway 2 and patented mining claims in the Mount Baptist area.

Snowmobilers who had been using an area inside the western boundary opposed the designation. Some concerns were voiced over timber potential, but timber production in the area had always been considered economically marginal.

Rattlesnake

The Rattlesnake Wilderness and National Recreation Area is located less than five miles north of Missoula. As the source of Missoula's water supply, the area had been maintained in pristine condition. This natural area was recognized during the RARE II process as having wilderness potential; the Forest Service recommended further study because of potential management problems, particularly the heavy use of the lower Rattlesnake and private land ownership within the area. It has been Forest Service policy not to recommend wilderness for any area where there are private inholdings.

The Friends of the Rattlesnake (FOR), a conservation organization, proposed designating the northern half of the area as wilderness, while reserving the southern half for recreation and wildlife habitat; Montana Representative Pat Williams introduced legislation that followed the FOR proposal. Motorcycle clubs protested this suggestion because it restricted their access to the higher lakes. Senator John Melcher introduced a Senate proposal that included a recreation corridor up Rattlesnake Creek from Franklin Bridge to Wrangle Creek, six miles into the wilderness proposed in the House bill.

Compromise legislation established a 33,000-acre wilderness and a 28,000-acre recreation area with the six-mile recreation corridor into the wilderness. President Carter signed the Rattlesnake Wilderness and National Recreation Area Act in October 1980.

Lee Metcalf

The signing of the Lee Metcalf Wilderness and Management Act of 1983 in October established the nation's first wilderness area on Bureau of Land Management land. The complex bill designated as wilderness four separate areas in the Madison Range comprising 259,000 acres: the BLM's Bear Trap Canyon and the Forest Service's Spanish Peaks Primitive area, Taylor-Hilgard area and Monument Mountain area.

The bill also released 150,000 acres in the area to multiple use, and removed about 42,000 acres across Montana that had been recommended for wilderness or wilderness study from further consideration as wilderness. The bill deleted some acreage from two existing wildernesses—the Absaroka-Beartooth and the UL Bend—to provide access corridors.

Finally, the act authorized the trade of Forest Service land in the Jack Creek area to Burlington Northern to resolve difficulties with checkerboard ownership.

Other Recent Activity

A special category of wilderness is represented by the Mission Mountain Tribal Wilderness. This area was created by tribal ordinance regulating land use on part of the Flathead Indian Reservation. Established in 1979 by the Confederated Salish and Kootenai Tribal Council, this designation protects an 89,500-acre area on the west face of the Missions. The Tribal Wilderness Ordinance was patterned after the 1964 Wilderness Act. The tribal management will be coordinated with the Forest Service, whose Mission Mountains Wilderness borders the tribal wilderness on its eastern side.

Wild and Scenic Rivers

The 1968 Wild and Scenic Rivers Act identified the Upper Missouri and Flathead Rivers in Montana as potential additions to the Wild and Scenic Rivers system. Portions of both rivers became part of the system in 1976. About 149 miles of the Missouri River, from Fort Benton to the Fred Robinson Bridge, and 219 miles of the North, Middle and South Forks of the Flathead River, were classified as wild, scenic or recreational.

Wildlands in Montana

Montana currently has 3.9 million acres, or 3.6 percent of the area of the state, included in fifteen wilderness areas. Most Montana wildernesses are on national forest land in the Rockies. The U.S. Fish and Wildlife Service manages the only wilderness areas in Great Plains Montana; at present there are no National Park Service wildernesses in Montana and only one BLM wilderness area.

There are, however, two recommendations pending before Congress for 1.1 million acres of national park wilderness in Montana, along with an additional 645,000 acres of Forest Service and wildlife range lands. The majority of the Forest Service areas were recommended for wilderness as a result of RARE II. Close to 90 percent of this acreage is located in Rocky Mountain Montana.

In addition to the designated wildernesses and wilderness recommendations before Congress, 1.7 million acres of Montana Forest Service and BLM lands are still under study as potential wilderness. Almost half of the study areas are located on BLM lands in Great Plains Montana. Of the Forest Service land, nine of the study areas were mandated by the Montana Wilderness Act; the remainder are RARE II further planning areas.

Elkhorns

The Omnibus Wilderness Act of 1976 directed the Forest Service to study the Elkhorns for wilderness suitability. In its 1978 draft report on the area, the Forest Service recommended 25,000 acres for wilderness out of a total of 64,000 acres. Many conservation and sportsmen groups felt that priority had been given to resource development at the expense of other resource values. A new plan, issued in 1981, emphasized wildlife protection. In February 1982, Senator John Melcher introduced legislation to establish an 85,000-acre Elkhorn Wildlife Management Unit.

Wilderness Study Act Areas

Three of the four MWSA areas evaluated so far have been recommended for non-wilderness. Part of the fourth, the Taylor, has been recommended for wilderness. The recommendations for the Big Snowies and the Middle Fork-Judith areas in the Lewis and Clark National Forest emphasize recreation and timber. The Beaverhead National Forest plan proposes to manage most of the West Pioneer area for motorized and non-motorized dispersed recreation. The remainder of the area is scheduled for range and timber management. These are preliminary recommendations, and Congress will make the final decisions.

BLM Wilderness Review

BLM has evaluated eight Wilderness Study Areas in the Dillon Resource Area. It recommended that a total of 27,211 acres in three WSA's—the Ruby Mountains, the Blacktail Mountains, and Farlin Creek—be designated wilderness. The remaining areas, totaling 67,198 acres, are recommended for non-wilderness.

The BLM Lewistown District Office has considered the wilderness suitability of twelve WSA's along the Missouri and Musselshell Rivers. The study recommends 79,700 acres of wilderness: one complete WSA and parts of four others. The study recommends non-wilderness for 90,430 acres, including seven complete areas.

Oil and Gas Leasing

Forest Service policy before the passage of the Wilderness Act had been to recommend against oil and gas leasing in primitive areas and wilderness areas. The Wilderness Act recommended that the policies and authorities in effect at the time of its passage continue. The authority to lease wilderness or primitive areas is reserved to the chief of the Forest Service. The chief will not normally recommend or approve mineral leases or permits in wilderness or primitive areas unless directional drilling or other methods can avoid any disturbance of the surface. The BLM actually issues the mineral leases, but as a practical matter it routinely accepts the Forest Service's recommendations.

Since 1977, the Forest Service had received so many lease applications that a backlog developed. In 1980 the court, in **Mountain States Legal Foundation v. Andrus et al**, ordered the Forest Service to process this backlog. The Energy Security Act of 1980 also called for the processing of all lease applications even before the completion of the forest management plans.

To deal with these requirements, the Forest Service developed guidelines for oil, gas and mineral leasing in wilderness areas, areas recommended for wilderness, and lands under study. The basic alternatives are: (1) make leasing recommendations or decisions with reasonable stipulations to protect

wilderness character; (2) make recommendations or decisions to deny leasing based on grounds of site-specific concerns; and (3) make recommendations or decisions to deny leasing for lands under study on the grounds that leasing is incompatible with preservation of existing wilderness character. In **Learned v. Watt**, the court ruled that federal agencies are not required to accept lease applications, but can reject them on the basis of threats to recreational and scenic values. The RARE II further planning areas were specifically left open to oil and gas leasing so the extent of the resources could be determined.

The initial phase of oil and gas development is exploration; on federal lands an exploration permit is required from the appropriate land manager. In 1980, the application for an exploration permit in the Bob Marshall-Great Bear-Scapegoat Wilderness complex touched off a controversy that is still not over. Early in the year, Consolidated Georex Geophysical (CGG) of Denver, Colorado, applied to the Forest Service for permission to fire 5,400 explosive charges (270,000 pounds of dynamite) along 207 miles of seismic lines in the wilderness areas. In April 1980, the regional forester denied the request on the grounds that CGG did not hold any leases on the land where it wanted to do the seismic testing.

In July 1980, CGG, the Rocky Mountain Oil and Gas Association, and the Mountain States Legal Foundation appealed the decision to the chief of the Forest Service. The Forest Service chief remanded the regional forester's ruling and directed him to make a decision on oil and gas exploration in the Bob Marshall Wilderness. The instruction read: "...until January 1, 1984, compatibility with the wilderness environment is not a determining factor in issuing a prospecting permit." In order to deny the permit, reasons unrelated to wilderness had to be identified.

On May 15, 1981, the regional forester denied CGG's lease application, citing the possibility of prejudicing a leasing EIS underway for the same area, possible repeated impacts if oil and gas leases were issued, conflicts with private recreation and outfitting, and conflicts with wildlife, geologic, scenic and recreation values. The regional forester acknowledged that the real issue eventually will be whether or not to grant oil and gas leases.

Beginning in April 1981, Representative Pat Williams sought to invoke Section 204(d) of FLPMA, which allows the House Committee on the Interior to prohibit exploration and leasing in a wilderness area when "...an emergency situation exists." On May 21, 1981, the committee invoked the clause, informing Secretary of the Interior James Watt that land within the Bob Marshall Wilderness complex was to be immediately withdrawn from oil and gas leasing. At that time 350 lease applications were pending for the three wilderness areas.

The Department of the Interior withdrew the Bob Marshall Wilderness complex from mineral leasing the first week in June. The Mountain States Legal Foundation and the Pacific States Legal Foundation promptly challenged the order in court.

U. S. Attorney General William French Smith stated the Bob Marshall Resolution was unconstitutional because it violated the separation of powers between the executive and legislative branches. The Federal District Court in Billings overturned the Bob Marshall Resolution on December 16, 1981. Judge Jameson allowed Secretary Watt to revoke the leasing withdrawal, but also told Watt to adhere to a promise he made November 19, 1981 that he would not issue wilderness leases until June 1, 1982. Watt complied, extending the moratorium until the end of the 1982 fall congressional session.

In February 1982, Representative Manuel Lujan (R-NM) introduced legislation for the Department of the Interior that would have withdrawn wilderness lands from new mineral developments until the year 2000. The president would have had the authority to open the lands to mineral activity, however, if there were an "urgent national need." The bill also would have set deadlines for any additions to the National Wilderness Preservation System.

The legislation did not pass. Representatives Lujan and John Sieberling (D-Ohio) worked out a compromise bill, HR6542, which would have permanently withdrawn wilderness areas from oil and gas, geothermal, coal, oil shale and phosphate leasing. Interim withdrawals would protect the RARE II areas recommended for wilderness or for further planning and congressionally designated study areas until either Congress acts or the forest management plans were rewritten in the mid-1990s. Seismic exploration would have been banned in designated wilderness areas. And the president would have been able to open a wilderness area to leasing if there was an "urgent national need," but only with approval of Congress. The bill did not deal with hard-rock mining or withdraw BLM wilderness study areas from leasing.

The House passed the Lujan-Sieberling "Wilderness Protection Act of 1982" by a margin of 340-52, but the measure failed to pass the Senate.

On September 17, 1982, the House Appropriations Committee voted to forbid the spending of federal funds to process leases or exploration permits for the wild lands. The panel attached the measure to a continuing appropriations resolution. The Senate approved an identical appropriations measure by voice vote on September 30. The prohibition remained in effect until the statutory deadline of January 1, 1984.

The administration has said it is willing to accept a permanent ban on oil and gas drilling in wilderness preserves, but wants limits on further expansion of the wilderness system, deadlines for Congress to act on wilderness recommendations, and permission for seismic testing in wilderness areas. As this report goes to press, the conflict over oil and gas leasing on wilderness lands continues unabated and unresolved.

Hard-rock Mining

Section 4(d)(3) of the Wilderness Act allowed staking of claims and exploration for hard-rock minerals until the end of 1983. After that, only claims of known commercial value are allowed to be mined. Proposed wilderness areas have always been studied thoroughly for their mineral potential. If significant deposits are suspected, Congress excludes the mineralized area from the wilderness. The Stillwater Complex was excluded from the Absaroka-Beartooth Wilderness and the Forest Service reclassified 28,000 acres of the Scotchman Peak roadless area from wilderness candidacy to a status of known mineral reserves.

Controversy over hard-rock mining in wilderness areas in Montana has centered on the impacts of drilling on water quality and grizzly bear habitat. In 1977, the American Smelting and Refining Company (ASARCO) began to develop claims in the Chicago Peak area of the Cabinet Wilderness. The impact of the project on grizzly bears was assessed by the U. S. Fish and Wildlife Service, which concluded that the exploratory drilling would not affect the numbers, distribution, or reproduction of the grizzly bear to the extent that jeopardy of the species would occur. Subsequently, two test holes for copper and silver deposits were drilled in 1979. In February 1980, ASARCO submitted a three-year operating plan.

The Forest Service completed an Environmental Assessment in June 1980. The key issues addressed were: (1) wilderness visitor enjoyment and the wilderness experience; (2) grizzly bears; (3) mountain goats; (4) water quality of lakes and streams; (5) fragile soils and vegetation; and (6) the need for an EIS to examine the cumulative effects of the project. The Forest Service concluded that the project operations could jeopardize the grizzly bears. It proposed such mitigating measures as restrictions on drilling (with no drilling after September 30 of each year), temporary and permanent road closures, and deferred timber sales. The Forest Service required all crews and equipment to be carried into the area by helicopter along established flight corridors and only at certain times. Lake drawdowns were also limited. The road closures reportedly irritated local residents who felt the closures favored ASARCO, did not protect the grizzly, and made the residents trespassers.

ASARCO drilled only ten holes during the 1980 season. Researchers from the Wilderness Institute of the University of Montana monitored the operations. They found the noise from the helicopters and drill rigs impacted the naturalness and solitude of the area and documented violations of the flight corridor and time restrictions. The authors made numerous recommendations to ASARCO and the Forest Service.

Conservation groups filed a suit in September 1980 to stop the ASARCO project. They contended the government had not acted to protect the Cabinet grizzlies and had not complied with the National Environmental Policy Act. A federal judge ruled in April 1981 that the Forest Service had complied with the law when it authorized the ASARCO project. An appeal was denied.

Grazing

Stockgrowers have generally been opposed to the designation of forest lands as wilderness. Although Section 4(d)(4)(2) of the Wilderness Act specifically states that livestock grazing is permitted in wilderness areas, stockgrowers feel that wilderness designation reduces or eliminates grazing. A Congressional committee agreed that national forest regulations and policies were acting to discourage grazing in wilderness, or were unduly restricting on-the-ground activities necessary for proper management.

RARE II hearings and field inspection trips revealed that national forest policies were subject to varying interpretations in the field that often were not in accordance with Section 4(d)(4)(2) of the Wilderness Act. Rather than amend the act, the Congressional committee proposed guidelines and policies which the Secretary of Agriculture accepted: (1) There shall be no curtailments of grazing simply because of a wilderness designation. Any adjustments will be the result of normal grazing and land management planning. (2) The maintenance of supporting facilities (such as fences, line cabins and stock tanks) that existed before the wilderness designation may continue. There also may be occasional use of motorized equipment where there was a prior history of use. (3) The use of "natural materials" for replacement or reconstruction of facilities should not be required unless the costs of using such materials are reasonable. (4) New improvements and facilities are permissible for resource protection and efficient management but not to accommodate increased grazing. (5) The use of motorized vehicles is allowed for emergency purposes only.

Motorized Recreation

Users of off-road vehicles are generally opposed to areas being designated as wilderness because their machines are not allowed in wilderness areas. Montanans, in general, do not favor the use of motorized vehicles in wilderness areas. In a Gallatin

County poll, three-fourths of those responding did not want snowmobiles in the proposed Lee Metcalf Wilderness. Only 10 percent said they had snowmobiled in the forests.

In Montana, areas have been excluded from wilderness because of opposition from snowmobile or motorcycle groups. About 9,600 acres were deleted from the Great Bear Wilderness to provide areas for snowmobiling. Under the Montana Wilderness Study Act, a snowmobile trail from Bozeman to West Yellowstone that crossed the Taylor-Hilgard area was allowed to continue under the condition that the wilderness character of the area be maintained. The area encompassing that snowmobile trail has been proposed for either national recreation area or wildlife management status. A six-mile recreation corridor into the Rattlesnake Wilderness allows access for both snowmobilers and motorcyclists.

Checkerboard Lands

Throughout the West, the federal government granted alternate sections of land to finance the construction of the railroads. This occurred before the establishment of the National Forest System, but today many of these sections are within the boundaries of the national forests. In Montana, Burlington Northern (BN) presently owns much of this land. Today, the checkerboard land ownership pattern creates problems for wilderness managers.

In the Rattlesnake Wilderness and National Recreation Area, Burlington Northern and the Montana Power Company together owned approximately 43 percent of the land. This checkerboard ownership problem was resolved when Montana Power traded its Rattlesnake lands for "bidding credits" on government-managed coal lands in southeastern Montana. BN agreed to trade for Forest Service lands outside the proposed wilderness.

In the Madison Range, BN owns 26 percent of the Jack Creek drainage. The Jack Creek area has been the site of considerable controversy because of the mixed land ownership. In 1977 the Forest Service and BN attempted to exchange 179,000 acres, but were stopped when Congress required all land exchanges of more than 6,400 acres to be approved by Congress. Since then, BN has been pursuing road building and timber harvest in the Jack Creek area. The U.S. Attorney General issued an opinion that BN has a right of reasonable access to its lands, which now includes a parcel traded to BN under authorization of the Metcalf Act.

BN owns 2,500 acres along the South Fork of Lolo Creek in the Selway-Bitterroot Wilderness. Negotiations with the Forest Service broke down in the summer of 1982 and BN could sell the land to private investors. If that should happen, the land would not be covered by wilderness designation. The Forest Service is required to allow access to the acreage, so a road could be built into the area, possibly threatening the surrounding wilderness lands.

Energy Corridors

Few suitable locations for high-voltage transmission lines exist across the Rocky Mountains in Montana. Two suggested corridors have been in areas studied for wilderness. In one case, the corridor was moved out of the proposed wilderness. In the other, the area was dropped from wilderness consideration.

A Bonneville Power Administration utility corridor was proposed for the Logan Creek and Dirty Face Creek drainages in the Great Bear Wilderness. This would have bisected the area and possibly attracted development. Some argued that there was apparently no demonstrated need for the corridor, and it was not included in the final Great Bear Wilderness plan. In the final legislation, the Senate deleted 1,200 acres along U. S. Highway 2 to make room for a power line.

The Montana Power Company has had plans since 1977 for a 161-kv line from Ennis to the Big Sky Resort via Jack Creek. DNRC granted approval for the project in 1977. Although a certificate of public need was granted, there are now questions as to the need for the power. Conservationists and guest ranch owners would prefer to have the powerline follow existing corridors rather than Jack Creek. The Forest Service did not act on this proposal while the Taylor-Hilgard study was underway.

BPA has identified two potential corridors through the Madison Range. One is Jack Creek. The other is from the Gallatin River, up the Taylor Fork, and down Indian Creek to the Madison River.

Recreation Impacts

The Wilderness Act defines wilderness as an area that "...generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable." Today, as wilderness areas receive more use, the impacts of man are becoming more noticeable. The most severe impacts occur near campsites and trails. Controls, in the form of education, party size limits, and day use only areas, have been instituted in some areas to

prevent overuse.

Campsite damage appears to be more a function of type of use than amount. Reduced plant cover is the most obvious effect of human use. Significant loss of plant cover can occur with only slight use, and the loss appears to stabilize with increased use. The loss of plant cover leads to increased soil erosion. The type of vegetation at a campsite changes as those species not able to withstand the trampling die. Trees near popular campsites are quite often mutilated and recreational livestock trample vegetation near campsites. Tying the livestock to trees damages both the trunks and roots.

Both trails and campsites change as use increases. Trail width increases slowly with increased traffic. Horse trails tend to be deeper, but not wider, than hiker-only trails. Wet meadows and alpine tundra are particularly susceptible to trampling. Helgath found that landform, vegetation type and trail steepness had greater effects on trail erosion or bog formation than did elevation, aspect, soil properties, slope steepness, or amount of use.

Resources

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FORESTRY

In Montana, the vast tracts of forested land, the cyclical, sometimes severe unemployment in timber-dependent communities, and the frequent disputes over the appropriate use of forestlands all serve to remind us of the environmental and economic importance of forestland. The forest industry provides not only wood products and direct employment, but also important wildlife habitat, recreation for thousands of visitors and grazing for domestic livestock. Forestland constitutes a vital link in the hydrological cycle of the Northern Rockies, storing and distributing moisture. The importance of the state's forestland extends well beyond timber production.

The federal government recognizes this importance. Spurred by concern over the condition of forestland and the future supply of forest commodities, the U.S. Forest Service initiated an extended resource planning process for its lands; the proposed programs will likely have broad physical, social, and economic impacts on all forestlands and their associated communities. Because it owns such a large percentage of the forests in Montana, the directions taken by the Forest Service could dominate the future of Montana's forests. By determining the availability and cost of the very large volume of federal timber, Forest Service policy may also have major impacts upon the intensity and location of nonfederal timber harvesting.

Current Forest Service planning efforts are directed primarily by the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended by the 1976 National Forest Management Act (NFMA). In addition, the Forest and Rangeland Renewable Resources Research Act of 1978 mandates that the Department of Agriculture collect and analyze "such facts as may be necessary and useful in the determination of ways and means needed to balance the demand for and supply of these renewable resources."

The national RPA goals, established in 1980, guided the establishment of goals for the Forest Service's Northern Region (Montana, northern Idaho, northeastern Washington and the Dakotas), published in 1981 as the Northern Regional Plan. After identifying important regional issues and management concerns and national guidelines, the Northern Regional Plan recommended management directions on a variety of concerns affecting national forests.

Forest plans are the most specific and detailed step in the Forest Service planning process. They are guided by the goals and policies identified in the regional plan, although exact compliance with regional objectives is not required. Forest plans address specific management concerns and establish management directions to accomplish the broad goals of the regional and national plans.

Currently, draft forest plans have been issued for the Lolo, Beaverhead, Lewis and Clark, Flathead and Kootenai national forests. Plans for the remainder of Montana's national forests are expected by 1984.

Recent USDA data indicate that Montana possesses about 22,559,300 acres of forestland, defined as those areas at least 10 percent stocked with trees of all sizes, or that formerly had such cover without being permanently converted to other land uses. Other recent studies have arrived at slightly different totals, usually due to different criteria for the inclusion of marginally forested areas. The USDA study included forest-rangeland transition zones, pinyon-juniper and chaparral ecosystems and urban fringe forests, so its estimate is probably close to a maximum.

Lodgepole pine, Douglas fir, fir-spruce and ponderosa pine ecosystems are the most extensive forest types in Montana. Stands dominated by these species account for over three-quarters of the state's forested acreage.

Forestland in Montana is primarily located in the mountainous western part. Central and eastern Montana forestlands are largely confined to the slopes of mountain ranges and to hardwood ecosystems of the major river valleys. Statewide, forests constitute about 24.3 percent of Montana's land area. The federal government owns the majority of Montana's forestland, with comparatively small areas under state or private management.

Accurate data concerning changes in Montana's total forestland are unavailable, although there is no doubt that nineteenth and early twentieth century settlement resulted in some clearing of timberland for agriculture. The Forest Service estimates the Rocky Mountains-Great Plains region lost some 600,000 acres of forestland between 1970 and 1980; however, the majority of this loss reportedly occurred in southwestern states, as pinyon-juniper ecosystems were converted to grazing land.

The long-range estimate is for a two percent decrease in the nation's forested acreage by the year 2030. Much of this is expected to occur in southern and eastern states. The Forest Service predicts that total forest acreage in the Rocky Mountains will be relatively stable over this period. But the amount of the state's forestland predicted to be available for commercial production is less certain. While virtually all state and private forestland is classified as commercial and this figure remains relatively constant, federal land is subject to changing suitability criteria, multiple-use constraints and administrative decisions. These factors result in variable federal commercial forest acreage. In 1977, for example, 64 percent (or 14,359,000 acres) of Montana's federal forestland fell into a commercial forest classification. But only about 42 percent of the national forestland in Montana was classified as commercial in 1982. The difference includes those lands not meeting the Forest Service productivity standard of 20 ft^3/acre/year and land withdrawn from commercial classification in order to meet non-timber management goals, including wilderness preservation. Proposed changes in Forest Service regulations may alter these figures somewhat, resulting in the eventual commercial classification of some lands presently considered biologically unsuitable for timber harvest.

National Forest Commercial Acreage (Thousands of Acres)

	1963	1968	1973	8/1982
Beaverhead	1069.3	1038.4	899.1	496.2
Bitterroot*	709.3	709.3	601.1	488.0
Custer	373.9	416.5	228.0	161.1
Deerlodge	832.2	845.7	761.6	743.6
Flathead	1192.1	1192.1	907.6	838.4
Gallatin	694.1	688.8	441.3	352.3
Helena	673.0	673.0	569.0	486.0
Kootenai**	1703.2	1675.4	1478.8	1489.3
Lewis & Clark	1198.5	1138.7	615.5	545.3
Lolo	1967.7	1967.7	1366.7	1367.2
Total	10413.3	10345.6	7876.7	6937.3

*Montana portion only

**Includes some Idaho acres

Source: U.S. Forest Service

Relatively little change in the commercial forestland base is expected over the 1980-2030 Forest Service planning period. Projections specific to Montana are not available, but the Forest Service expects the major changes in commercial forest acreages in the Rocky Mountains to primarily result from Wilderness System allocations and the conversion of small private forestlands to nonforest uses, especially grazing.

In Montana a major change in forest industry ownership or classification is not foreseen. Private owners and the state are negotiating land exchanges with federal agencies, but such arrangements are usually contingent on the nonfederal owner suffering no loss of commercial forest value. Recent changes in Forest Service policy are likely to discourage such exchanges.

Productivity

Timber production is subject to various economic factors beyond the control of the forest corporations or public land managers. However, timber planners expect increasing timber harvests on northern Rocky Mountain forestlands. The Forest Service projects an increase of one-third in the Rocky Mountain region by the end of the 1980-2030 planning period. Despite this, the Forest Service's Northern Regional Plan suggests that while the demand for Montana forest products will increase over the next 50 years, total production from the region's forestlands will not increase through the year 2050. Rates of production in the region are low by national standards, reflecting relatively low productivity in the Rockies and an expectation that non-timber resources will continue to be accorded greater importance here than in some other regions. In recent years there has been a decline in production from national forestlands in Montana and an increase in the harvests from private forestlands. The percent harvested from state lands has increased somewhat during recent years of low total production, but the absolute volume has been quite steady.

This trend is expected to reverse. Recent production from private industrial forestlands reflects the rapid elimination of old-growth stands; the harvest levels achieved in this manner are not expected beyond the mid-1980s. For this reason, Forest Service planning for the Northern Region calls for an increase in the national forests' production share through most of the 50-year planning period. To meet this anticipated demand, long-range objectives on national forests in Montana include significant increases in timber offerings. In the short term, the Northern Region anticipates 12.7 percent more timber offered for sale from 1982 to 1986.

Of the national forests in Montana, the three in the northwest (Flathead, Kootenai, and Lolo) contain the most commercial forestland; they also have a higher percentage of their areas within higher productivity categories than do the other national forests of the state. These three forests have accounted for over three-quarters of Montana's national forest timber production since 1977. The Custer, Lewis and Clark, and Helena forests have accounted for less than 5 percent of Montana's national forest timber production over the same period. The relatively low productivity characteristic of Montana's southwestern and eastern national forests precludes any major change in this distribution.

Checkerboard Ownership

Montana has large areas of forestland that alternate in private and federal ownership. This ownership pattern presents an important management problem to both government and private owners. Commonly referred to as checkerboard lands, these areas of mixed ownership often cause problems over access to timberlands, opposing or incompatible management priorities, and accentuated environmental degradation due to uncoordinated silvicultural activities on the part of the various owners.

The Northern Region's planning process included an analysis of the Forest Service's policy regarding checkerboard forest lands. The Regional Plan recommends allowing the individual forests considerable latitude in dealing with areas of alternating ownership.

The Northern Region has operated "...with the general objective to consolidate National Forest lands intermingled in a checkerboard pattern with lands owned by large private corporations...." Under a proposed new policy, the consolidation of intermingled lands would no longer be a general goal. Land consolidation would still be pursued for some management ends, notably wilderness management, but exchanges of land would not be initiated solely to improve the efficiency of federal or private timber management.

The Forest Service concluded that consolidation could have a number of adverse impacts, such as changes in county tax bases resulting from the federal acquisition of private lands, a decrease in the national forest commercial land base if productive national forestlands are exchanged for poorer private lands, and a decrease in habitat diversity on national forestlands with possible adverse effects on wildlife.

The Northern Regional Plan recommends avoiding land exchanges with corporate forest owners if they would result in "...a significant loss of the total

National Forest acreage classified as available and capable of timber production." The retention of checkerboard ownership means that forestland quality and productivity in these areas will continue to depend heavily on cooperation between federal and corporate owners. Some management inefficiencies will remain, but the Forest Service will probably retain more low-elevation, highly productive forestland. This may help meet regional and national harvest goals.

Management

The National Forest Management Act stipulates that each Forest Service region establish standards for a variety of forest management practices, including silviculture systems (even-aged vs. uneven-aged harvesting), the permissible size of tree openings resulting from harvest activities, the duration of those openings, biological growth potential for commercial forestlands, utilization standards for harvested acres, and air quality standards associated with such silviculture activities as slash disposal.

In most instances, these practices have been established in the past at the forest level or ranger district level, with little formal guidance from regional policy. The practice of clearcutting on national forests has long been controversial, due to the visual impacts and the severity of the associated soil, water, and other impacts. Public pressure and changing management priorities have resulted in some reductions in the Forest Service's dependence on clearcutting in Montana's national forests, including decreasing the size of individual clearcuts.

Since 1973, Forest Service guidelines have encouraged keeping the size of clearcuts below 40 acres, although the degree to which this loose policy has been adhered to is unknown. The Forest Service's preferred policy, as identified in the Regional Plan, is to require public review and approval by the regional forester of clearcuts larger than 40 acres unless one or more of several management concerns are better met by larger harvest units. These exceptions include cases where:

— a natural catastrophic event (such as wind, fire, or disease) has occurred;

— larger cuts will help reduce road construction;

— visual quality objectives are better met by the shaping of cut acres to landforms; and,

— existing shelterwood cuts require the timely removal of shelter trees.

The region's original proposal was to limit stand openings to no more than 80 acres. The size of clearcut units has various implications for both resource management and harvesting efficiency. The Forest Service considers that larger cuts are more cost efficient in harvesting and sale preparation, while the 40-acre standard is thought to be roughly optimal for replanting and associated site preparation. Even smaller openings might be preferable in terms of direct water and soil impacts, but smaller openings require a higher density of logging roads, and road construction is one of the major sources of soil and water disruption associated with logging.

The region recommended retaining a regrowth standard of 20 ft^3/acre/year as the minimum biological growth potential for a forestland to be considered as commercial. The region has determined that lands below this standard are too slow to reestablish timber stands to justify the construction of road systems. There was some discussion of raising the minimum above 20 ft^3/acre/yr; a higher standard would be beneficial to some wildlife, recreational and watershed resources, as less acreage would be disturbed by road construction and timber harvesting.

The Forest Service calculated raising the minimum standard to 50 ft^3/acre/yr would cause a 12.3 percent reduction in commercial acreage statewide. The change in the base would be greater in central and eastern Montana, where a 25 percent reduction in acreage was predicted. Western Montana forests would be relatively unaffected, with a reduction of only 3.7 percent. The timber volume available for harvesting under the higher standard is uncertain. However, the reduction would be much less than the change in acreage, as only the least productive forestlands would be deleted.

The NFMA requires that regional standards be set for the minimum tree size requirement for inclusion in the calculated volume of national forest timber sales. The Northern Regional Plan recommends reducing the minimum size one inch from the existing standards at both measuring points: breast height and top. A reduction in the usable percentage of a tree (percent sound) standard for inclusion in sale volumes is also planned, from 33-1/3 to 25 percent.

Several effects from this change in standards are expected. The inclusion of smaller trees in the assessed volume of Forest Service timber sales will probably decrease the unit price paid on timber sales. However, the increased volume assessed to each sale from the new standards may result in higher net receipts.

The region sees its new standards as one way of increasing its annual harvest. These standards do not require timber purchasers to use these smaller-sized trees, but they must pay for this additional volume. The policy will probably lead to greater utilization of small logs. This will reduce the slash left on sale tracts, possibly decreasing the firewood available to the public and the organic material returned to the soil.

Evenflow Departure

The NFMA also permits national forests to depart from the Forest Service's long-standing policy of non-declining, evenflow harvest. A 1979 presidential memorandum specifically required the Forest Service to consider such departures, particularly on those national forests with large volumes of old-growth timber. Among the strong candidates for this change were the Lolo, Flathead, and Kootenai forests. The Lolo planning team elected not to propose any departure from evenflow harvesting. The Beaverhead and Lewis and Clark National Forests included such options in their draft plans, but neither recommends the policy for their forests.

Insects and Disease

Insect and disease damage to forests continues to be a major concern to federal, state and private land managers.

Timber managers consider the mountain pine beetle to be the most destructive forest insect in the state. In 1981 the Forest Service inventoried over 2.4 million acres of infested Montana forestland. The majority of this infestation (over 2 million acres) is in lodgepole pine stands, particularly on the Gallatin, Beaverhead, Flathead and Kootenai national forests and Yellowstone and Glacier national parks and surrounding non-federal land. Areas of less severe infestation are scattered through western and central Montana. In addition, over 80,000 acres of ponderosa pine stands are affected, primarily in central and eastern Montana. Smaller acreages of western white pine (along the South Fork of the Flathead River), whitebark pine and limber pine are also affected.

The mountain pine beetle infestation is increasing on portions of the Kootenai National Forest, but levels are currently static or decreasing on the rest of the timberlands in the state.

Western spruce budworm populations have remained relatively high in southwest and southcentral Montana over the past several years. However, budworm defoliation statewide has decreased for the fourth consecutive year. A major decrease in damage on the Gallatin National Forest was primarily responsible for the decline, due to unfavorable weather conditions for the insect. But a major increase in damage on the Bitterroot National Forest and surrounding non-federal lands resulted in little change statewide for 1981. A variety of other, less widespread forest insects are monitored by the Forest Service's Cooperative Forestry and Pest Management office. While none of these is currently damaging large amounts of merchantable timber, they are of concern to timber management personnel; cyclical population outbreaks of any of these may lead to suppression and control programs on the part of timber owners.

Disease damage to Montana forestlands is caused primarily by several root diseases, Armillaria Root Rot being the most common. These diseases cause important mortality and loss of productivity over large areas of the state's forestland. Some forestry professionals expect that root disease may overtake the pine beetle as the most commercially damaging forest organism.

The Custer and much of the Deer Lodge and Beaverhead national forests are relatively free of Armillaria Root Rot, which is most damaging in a broad band extending from west-central to central Montana, including portions of the Lolo, Kootenai, Helena and Lewis and Clark national forests, as well as adjoining state and private lands. Armillaria Root Rot poses a difficult management problem because it most readily becomes established in stumps before spreading to nearby living trees. Areas thinned for silvicultural purposes (including the control of other forest pests) thus provide favorable conditions for root diseases, which are reportedly spreading in such thinned areas.

National and regional forest planning teams believe that reducing timber losses to insect and disease damage is one important means of increasing U. S. forest production. Montana's land management agencies and private owners are planning to pursue this goal with an expansion of management practices already in use. These include preventive harvesting of undamaged stands considered to be at high risk; mixing species in stands to reduce the chances of pest epidemics; harvest methods to reduce pathogens such as root disease and dwarf mistletoe; and chemical and biological spray programs where appropriate.

The Northern Regional Plan emphasizes the increased harvest of insect-killed and disease-killed timber and integrated pest management strategies (IPM) involving the identification and harvesting of high-risk stands. Computer modeling of the behavior of some forest insects is assisting in the understanding of outbreak patterns, although these techniques have not yet been applied to all of the important insect species. These strategies are expected to reduce timber losses to insects and disease in the state, but they require access to the stands to be treated, sometimes leading to increased road construction.

Chemical pest control has generated much controversy. Noxious weed control, using the herbicides Picloram and 2,4-D, has been undertaken on some Forest Service lands in the state. The Forest Service planned to treat about 4,000 acres in 1982, most of them on road right-of-way or rangeland. But aerial chemical spraying of replanted forestland, such as that done experimentally in Idaho in 1982, is not anticipated on Montana forestland. Previous attempts to use chemicals to control large outbreaks of mountain pine beetle have proven uneconomical; neither the Forest Service nor the state plans large-scale chemical treatments for the pine beetle, although local treatment in areas such as campgrounds and administrative centers will probably continue.

Both Department of State Lands and Forest Service personnel indicate that future chemical treatment of spruce budworm outbreaks is a possibility, although no specific plans for major spraying programs have been made. The Forest Service evaluates chemical control programs on a cost-benefit basis, and hopes to minimize the use of chemicals through integrated pest management strategies.

An experimental application of the microbial insecticide Bacillus thuringiensis was carried out on a spruce budworm-infested plot in the Deer Lodge National Forest in 1981, but an evaluation in 1982 indicated a significantly lower rate of budworm kill than could be achieved through chemical spraying. However, there were reportedly problems with the timing of the application and the subsequent testing, and the Forest Service hopes to continue experimental efforts with this and other biological controls.

Resources

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MINERAL RESOURCES

Hard-rock mining in Montana has historically been considered synonymous with gold, silver and copper mining. These metals account for a large percentage of the state's mineral output. However, the mining and mineral processing industry in Montana depends on a large number of minerals; over thirty minerals exist in potentially commercial quantities. While some of these probably won't be economical to mine in the near future, others have been and will be recovered, at least as by-products in the mining or processing of gold, silver or copper. Presently, the demand for Montana's mineral products is low. But in the long term the expected demand for products derived from Montana's mineral resources makes expanding production likely.

Antimony

U. S. Antimony's Babbit mine and mill complex in Sanders County is one of only two producing antimony mines in the country. The facility employs 20 people when it operates at full capacity. Although poor market conditions reduced production in 1982, the processing facility has recently expanded and future production will likely increase.

Barite

Barite is fairly common throughout the western part of the state. The largest use of barite is in drilling muds for the oil and gas industry. Increases in domestic oil and gas drilling in the late 1970s increased demand for Montana barite. Montana Barite Company, the state's major processor of the mineral, tripled its processing capacity in 1981. But any decline in drilling activity will reduce barite production.

Bentonite

Sodium bentonite is a clay mineral of widespread industrial value. It is used in the processing of animal feeds, iron ore and drilling muds, to name a few applications. Wyoming, Montana and North Dakota

Montana Nonfuel Mineral Production

Mineral	1979		1980		1981	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Antimony ---------- short tons	W	W	260	W	214	W
Clays ---------- thousand short tons	424	11,508	626	22,200	601	23,111
Copper (recoverable content of ores, etc.) metric tons	69,854	143,268	37,749	85,236	62,485	117,257
Gem stones	NA	100	NA	90	NA	100
Gold (recoverable content of ores, etc.) troy ounces	24,050	7,395	48,366	29,627	54,267	24,943
Lead (recoverable content of ores, etc.) metric tons	258	299	295	276	194	157
Lime ---------- thousand short tons	216	8,965	223	9,001	194	7,621
Sand and gravel ---------- do	7,012	15,106	[4]6,639	[4]16,057	p [4]6,100	p [4]14,900
Silver (recoverable content of ores, etc.) thousand troy ounces	3,302	36,618	2,024	41,773	2,989	31,437
Stone (crushed) --- thousand short tons	2,527	7,806	1,962	6,302	1,582	5,137
Talc ---------- do	343	5,940	312	11,310	W	W
Zinc (recoverable content of ores, etc.) metric tons	104	86	71	59	25	24
Combined value of barite, cement, gypsum, iron ore (1979 and 1981), peat, phosphate rock, sand and gravel (industrial, 1980-81), stone (dimension), tungsten, vermiculite, and values indicated by symbol W	XX	54,196	XX	57,619	XX	80,384
Total ----------	XX	291,287	XX	279,550	XX	305,071

Source: U.S. BLM

contain up to 90 percent of the world's known supply of this mineral.

In recent years there has been a large increase in demand for bentonite; this has resulted in the development of new facilities in Phillips, Valley and Carter counties. However, activity at most of these projects has been at least temporarily curtailed due to the decline in the oil and gas industry in Montana. Because the industrial uses of bentonite are diverse, and because the potential sources are limited, Montana will probably continue to be a major producer of bentonite.

Copper

Long the mainstay of Montana's mineral industry and once the dominant factor in the state's economy, copper mining in the state is changing on several fronts. The closure of Anaconda Mineral Company's Berkeley Pit may be permanent, although large quantities of ore remain.

The startup of mining at Lincoln County's Troy Mine in 1981 and the strong possibility of further development in that area represent an important shift in the statewide distribution of copper mining. Exploration for copper and other metals at the historic Hog Heaven District in Flathead County is continuing, although this deposit may not be economically attractive without a significant improvement in metal prices. Recent exploration projects have been carried out in Lincoln, Sanders, Silver Bow, Cascade, and Park counties, among others.

Gold

In recent years, most of the state's gold production has occurred as a co-product of copper mining at the Berkeley Pit in Butte. In 1977, about 95 percent of Montana's gold came from this source.

Cyanide heap-leaching of gold and silver ore tailings began at the Zortman and Landusky mines in Phillips County in 1980. In that year, statewide gold production doubled from the 1979 level, with the Zortman and Landusky mines (the ninth and twelfth largest nationally) taking over as the largest producers. These leaching operations are expected to expand considerably in the near future. Placer Amex's Golden Sunlight Mine near Whitehall began operating in February 1983; it will provide another major new source.

Smaller-scale placer and hard-rock operations are operating seasonally in many areas of western and central Montana. These are very responsive to variations in gold prices. They were less active recently than in previous years of high prices. But the DSL expects it may receive about 20 permit applications for gold mines in 1984.

Lead and Zinc

Lead and zinc commonly occur in many of the mining districts of western and central Montana. These metals can be extracted during the processing of many of Montana's complex metallic ores, but only when economics justify it. Recently low prices have resulted in negligible production of both metals in the state.

Notwithstanding, there has been recent exploration for lead-bearing deposits in Meagher County. In fact, there are probably a number of complex deposits statewide that would be commercially attractive if lead or zinc prices were higher.

Limestone

Limestone, used primarily in the manufacture of Portland cement, ranks sixth in value among Montana's mineral products. Kaiser Cement Corporation's Montana City quarry received DSL authorization for a major expansion in 1979, and future developments of limestone in the state are likely.

Phosphate

Phosphatic rock occurs over a large area of western, central and southern Montana. Current production is confined to Cominco American's Warm Springs mine near Garrison in Powell County, the only underground phosphate mine in the U. S. The demand for western phosphate is expected to expand in the 1990s. Currently, almost 90 percent of the domestic phosphate is produced in Florida and South Carolina.

Platinum and Palladium

(See the Stillwater Complex section in this chapter.)

Sand and Gravel

By volume, sand and gravel production is greater than that of any other mineral in Montana. In value, it is exceeded only by copper, silver, gold and bentonite. Commercial sand and gravel deposits are widespread in the northern half of the state and along the major river valleys. The cost of transporting sand and gravel is usually high and producers therefore tend to locate pits and quarries near major markets. Montana's production is expected to remain high.

Silver

In the recent past, Anaconda's Butte mining operation accounted for around 90 percent of Montana's silver output as a co-product of copper mining. The closure of the Berkeley Pit and the opening of major new sources, such as the Troy mine and the Zortman and Landusky mines, have redistributed the state's silver production. Most of it will continue to come from complex (multimetallic) deposits, especially copper/silver ores.

Silver producers were also heavily affected by recent poor markets. Planned expansions were postponed at a number of mines, and at least one important permit application (for a new open pit mine in Ravalli County) has been postponed by the applicants.

But a permit application has been filed for a potentially important silver/copper/lead project in Flathead County. A number of silver mines are identified by the Montana Bureau of Mines and Geology as "developing" in Beaverhead, Cascade, Granite, Jefferson and other counties, but they are also indefinitely postponed.

Talc

Cyprus Industrial Minerals and Pfizer, Inc. operate multiple talc quarries in Madison County, an area known for deposits of this mineral. These companies recently expanded their Montana operations and are continuing exploration activities. Expanded production of talc is probable.

Tungsten

Tungsten production has occurred sporadically in Montana, most coming from tungsten/gold ores. While the current production is small, deposits are widespread and this metal may be one likely to expand in importance in Montana. The Bureau of Mines and Geology identified two developing sources in 1981, one a silver/tungsten/molybdenum mine in Beaverhead County and the other a tungsten/molybdenum mine in Broadwater County. The Homestake/Jardine mine in Park County will have the potential for production of tungsten as a co-product. And the Montana Tungsten Project in Deer Lodge County may become an important producer.

Vermiculite

The vermiculite mine and mill owned by W. R. Grace and Company in Lincoln County produces

Montana Production by County

County	(Thousands) 1979	1980	Minerals produced in 1980 in order of value
Beaverhead	$964	$1,119	Silver, stone, sand and gravel, gold, lead, zinc, copper.
Big Horn	W	567	Sand and gravel, stone.
Broadwater	W	41	Gold, silver.
Carbon	4,061	W	Clays, stone, sand and gravel.
Carter	W	W	Clays.
Cascade	W	W	Sand and gravel, stone.
Chouteau	162	W	Do.
Custer	111	--	
Daniels	8	28	Sand and gravel.
Dawson	449	618	Do.
Deer Lodge	8,178	9,021	Lime, stone, sand and gravel, clays.
Fergus	1,123	W	Gypsum, sand and gravel, stone.
Flathead	3,997	2,778	Sand and gravel, stone.
Gallatin	20,681	17,736	Cement, stone, sand and gravel, clays.
Garfield	2	--	
Glacier	W	--	
Golden Valley	1	--	
Granite	7,625	6,646	Silver, copper, gold, stone, lead.
Hill	19	W	Sand and gravel.
Jefferson	15,024	18,900	Cement, stone, silver, sand and gravel, gold, lead, zinc, clays, copper, tungsten.
Judith Basin	W	W	Gypsum.
Lake	W	W	Sand and gravel, peat.
Lewis and Clark	1,077	1,718	Sand and gravel, stone.
Liberty	W	W	Sand and gravel.
Lincoln	W	W	Sand and gravel, vermiculite.
McCone	9	--	
Madison	6,883	12,183	Talc, gold, silver, lead, sand and gravel.
Meagher	W	4	Gold.
Mineral	612	W	Silver, sand and gravel, gold, lead, copper, stone.
Missoula	W	W	Barite, stone, sand and gravel.
Musselshell	42	48	Sand and gravel.
Park	W	621	Silver, sand and gravel, stone, copper, lead.
Petroleum	31	35	Sand and gravel.
Phillips	3	29,908	Gold, clays, silver, sand and gravel.
Pondera	W	W	Sand and gravel, stone.
Powell	W	W	Phosphate rock, sand and gravel, copper, gold, stone, silver.
Ravalli	765	W	Sand and gravel, peat, stone.
Richland	W	W	Lime, sand and gravel.
Rosebud	W	345	Sand and gravel, stone.
Sanders	W	W	Antimony.
Sheridan	57	48	Sand and gravel.
Silver Bow	178,215	126,035	Copper, silver, gold, sand and gravel.
Stillwater	W	W	Sand and gravel.
Sweet Grass	123	--	
Teton	--	9	Stone.
Toole	146	168	Sand and gravel.
Valley	W	W	Clays, sand and gravel.
Wibaux	8	9	Sand and gravel.
Yellowstone	W	W	Sand and gravel, lime, clays.
Undistributed[2]	40,915	50,959	
Total[3]	291,287	279,550	

W Withheld to avoid disclosing company proprietary data; included with "Undistributed."

[1]Blaine, Fallon, Powder River, Prairie, Roosevelt, Treasure, and Wheatland Counties and Yellowstone National Park are not listed because no nonfuel mineral production was reported.

[2]Includes stone (1979) that cannot be assigned to specific counties, gem stones, and values indicated by symbol W.

[3]Data may not add to totals shown because of independent rounding.

Source: U.S. BLM

most of the vermiculite in the United States. Much of this vermiculite is used in building construction and the slowdown in this industry caused serious declines in vermiculite production during 1982. The reserves, however, are large and the mine will continue to operate for many years.

Exploration

Under Montana's Metal Mine Reclamation Act, also known as the Hard-Rock Act, companies and individuals engaged in mineral exploration that might damage surface resources must obtain an exploration license from the Department of State Lands. The requirements for a license include posting a bond to ensure the reclamation of any surface disturbances. In June 1982, 61 companies had licenses in 24 counties for about 150 projects.

A number of these licenses are for expansions of existing mines. Others relate to new projects in areas historically associated with mineral development. Projects in relatively new areas include copper/silver exploration in Lincoln and Sanders counties, PGM and Anaconda projects in Stillwater and Sweetgrass counties, and molybdenum exploration in Cascade and Beaverhead counties.

Reclamation

Montana's Hard-Rock Act requires that mines that extract more than 36,500 tons of ore in a calendar year or disturb more than five acres must obtain an operating permit. The permit application must include detailed plans of operation and reclamation and other pertinent information. The act allows denials of permits only in cases where federal or state air or water quality standards would be violated, or where adequate reclamation would be impossible.

The Hard-Rock Act requires that land disturbed by mining be reclaimed to a useful condition, although not necessarily to the same use as existed prior to mining. Provisions must be made for the protection of human and animal safety and discharges of "objectionable effluent" from the mine site must be prevented. Revegetation is required to the extent that it is appropriate to the needs of the reclaimed land use.

The law also requires the posting of a performance bond by the applicant. The amount of the bond (at least $250/acre) is calculated to provide the necessary funding for reclamation if the operator should fail to meet the terms of the permit.

State reclamation laws authorize the state to forfeit its jurisdiction over reclamation on federal lands when federal standards are more stringent than applicable state laws. Presently all of Montana's hard-rock and opencut reclamation laws are more stringent than corresponding federal statutes. While DSL is seeking greater cooperation with federal agencies on reclamation issues, it expects to remain the lead agency in mined-land reclamation in the state.

Small Miner Exclusion

Small hard-rock (including placer) miners, those who do not exceed the 36,500 ton annual minimum or disturb more than five acres at one time, are not required to file for permits, although they must obtain a Small Miner Exclusion from the Department of State Lands. This exempts the holder from the siting and reclamation standards that apply to larger mines. Small miners are still subject to state water quality laws, and they must obtain discharge permits from the Department of Health and Environmental Science's Water Quality Bureau (WQB) if they plan to discharge effluent into state waters. The WQB issues special permits for the use of suction dredges and other placer mining equipment that discharge into surface waters; most of these permits are held by small miners. These permits prohibit an increase in downstream turbidity and prescribe self-monitoring requirements for the mine operators. As of August 1982, approximately 90 such permits were in force.

Opencut Mining

The extraction of minerals under the state's Opencut Mining Act requires a contract with DSL's Opencut Mining Bureau when more than 10,000 cubic yards per year will be extracted. The Opencut Act provides standards of operation and reclamation. Contractual obligations include the posting of a performance bond equivalent to the estimated cost of reclamation, except where the applicant is a government entity.

Reclamation under the Opencut Mining Act does not call for the re-establishment of original topography or land use. The restoration of original topography is considered impractical for many opencut operations because most of the material extracted is utilized, leaving little overburden for backfill.

A common criticism of the original Opencut Mining Act was that the Department of State Lands had no authority to impose sanctions against violators. Responsibility for enforcement was given to county prosecutors, who often were unenthusiastic about pursuing such cases. This situation changed in 1981 when DSL was given the authority to prescribe civil penalties for violations of the act.

Presently, Department of State Lands' 1,552 Opencut Mining and Reclamation contracts cover 27,615 acres in 55 Montana counties. Not all of these are active at any one time and the reclamation

contracted for often occurs simultaneously with mineral extraction. At any one time, a typical mining operation may have only a small portion of its contracted acreage in an unreclaimed state.

Of all the opencut contracts held by DSL, two-thirds are with either county governments or the Montana Department of Highways to mine aggregate for road building.

Statewide, a high percentage of the contracted opencut acreage belongs to a few large operations. Fifteen contracts involving over 100 acres (many for bentonite mines) account for about 64 percent of the total permitted acreage in the state. Most of this acreage is in Blaine, Carbon, Carter, Phillips, Rosebud, Treasure, and Valley counties.

Abandoned Mines

The reclamation of orphan mines abandoned or left inoperative before the enactment of the Hard-Rock and Opencut acts is not required. This includes a number of abandoned underground and placer mines. In 1966, the U. S. Bureau of Mines estimated that there were 16,000 or more abandoned or inactive underground mines in the western U.S.

The DHES and DSL are presently assessing a number of areas where drainage and erosion problems caused by abandoned mines are severe (see water quality chapter). The scarcity of funding is the limiting factor in attempting to deal with the problems associated with abandoned mines. In a case when an abandoned mine is the site of redevelopment, the DHES does have authority to require compliance with water quality statutes.

Locating the owner of an abandoned mine is difficult. Further, once located, the owner may not have the financial resources to reclaim such a site. Because of these factors, the DHES has never forced the owner of a pre-law abandoned mine to comply with state water quality standards.

No funding mechanism outside of the Federal Abandoned Mine Land program exists for these abandoned mines. The same holds true for mines not classified as hard-rock. Abandoned rock quarries and sand and gravel pits dot the state, and abandoned bentonite pits are a common feature in some areas.

The Federal Surface Mining Control and Reclamation Act of 1977 contains an important provision relating to abandoned mine lands. It directs that a fee be collected for each ton of coal produced. Montana's subbituminous coal is assessed at 35 cents per ton.

Fifty percent of this fund is earmarked for the reclamation of abandoned mines under a state-run Abandoned Mine Land (AML) program. In Montana, the Department of State Lands administers this program.

The goal of the AML program is to reclaim mining properties abandoned prior to the enactment of federal or state reclamation laws. The primary focus of this program is to reclaim abandoned coal mines, but there is also a provision for the use of some of this money to reclaim hard-rock mines and other mined lands that present a hazard to public health or safety.

The DSL has conducted extensive research in cooperation with the Montana Department of Natural Resources and Conservation and other state and federal agencies. This has resulted in a statewide list of problem abandoned mines. Reclamation work on coal mine areas under this program is resulting in successful land and water rehabilitation.

The list of hard-rock AML sites includes several that are causing water quality problems of statewide significance. These adits, millsites and tailings are causing acid drainage, metal contamination and sedimentation in state waters. Recognizing the severity of these non-coal abandoned hard-rock mine impacts, the AML Bureau has initiated baseline and engineering studies on several sites. In 1982, the Montana AML budget proposal of more than $8.6 million included about $3.3 million for work at five important hard-rock sites in Jefferson, Beaverhead, Silver Bow and Park counties.

While there was approximately $20 million in the Montana AML fund as of July 1982, monies left unspent in the fund for a period of three years revert to the Office of Surface Mining. Because of this, and because the program is authorized for only fifteen years, DSL considers a rapid resolution of this disagreement to be very important to the success of the AML program. Meanwhile, the AML Bureau is continuing to monitor these sites.

Surface Disturbance

The surface disturbance of land is an important impact of mining. It creates large areas of visually displeasing landscapes and restricts the area's usefulness for other activities. But the amount of land disturbed is only generally indicative of the potential for damage to other resources. Sometimes, depending on the mineral involved and on variables such as topography and precipitation, mines with relatively minor areas of surface disturbance may have great impacts on water, air or soil.

Department of State Lands data indicate that about 50,000 acres statewide may be disturbed by miners

and mineral processors under DSL hard-rock operating permits, opencut contracts and small miner exclusion statements. These figures cannot be taken as a dependable indication of actual surface occupancy. Opencut operators, in particular, often reclaim land simultaneously with mining elsewhere. Some operations may never disturb all of their allowed acreage, and many small miners probably never reach the five-acre limit of their Small Miner Exclusion Statement. Conversely, surface disturbances predating the state's reclamation laws are important in many western Montana mining districts and many bentonite areas of eastern Montana.

The U. S. Bureau of Mines indicates that from 1930 to 1980, the nonfuel mineral industry directly utilized 48,525 surface acres in Montana. As the USBM points out, this is a small area in comparison to other land uses. The total area reported for Montana (including coal mining commitments) amounts to only .07 percent of Montana's land area; the national figure is .25 percent. These data do not include all haul roads, rail lines, or water impoundments, which represent a significant portion of the total mine-associated commitment of land. As part of the same study, the USBM compiled information on reclaimed land area for various commodities. Of this disturbed area, 28.6 percent has been classified reclaimed in Montana. This is relatively low compared to a 47.4 percent figure nationwide. It might reflect the fact that the minerals that have historically accounted for much of Montana's mining (copper, sand and gravel and phosphate) have relatively low rates of reclamation. As indicated by the USBM, the relatively slow rate of mined land reclamation associated with large metal mines is in part due to a great longevity for these operations. Additionally, simultaneous reclamation, as often practiced in coal mining, is seldom practiced in hard-rock mining.

State-owned Minerals

The Montana Board of Land Commissioners has authority to lease metalliferous and other nonmetallic minerals that are under state-owned lands. Nonmetallic mineral leases are typically granted for an initial period of ten years, after which the board may extend the lease. Mineral leases can be revoked at any time for failure to protect surface resources or to reclaim the land.

Mineral leases require the payment of rentals and royalties. Rentals are assessed on a per acre basis (usually $1.50 per acre) and must be paid annually whether or not ore is actually mined. Royalties are charged on the net return from leased mineral deposits. State law allows for royalties of between 5 and 8 percent, although currently all nonmetallic state mineral leases are assessed at the 5 percent rate.

Only four of the 185 leases in effect were considered active in 1981-82; the large majority were inactive due to poor markets or speculative holding of leases for resale.

Income to the state from rentals and royalties goes into various state trust funds. The current nonmetallic mineral leases are all on lands that support the school trust fund, with the exception of one Department of Institutions lease.

Stillwater Complex

In August 1982, the Anaconda Minerals Company applied for an operating permit from the Department of State Lands for a platinum/palladium mine and mill complex near Nye in Stillwater County. This application was submitted after several years of exploration and assessment work and is similar to a project being planned by Stillwater PGM Resources. The target of these projects is the Stillwater complex, an ancient body of igneous rock containing deposits of chromium, nickel and copper, as well as platinum and palladium. The Stillwater complex extends almost thirty miles along the northeastern edge of the Beartooth Mountains.

Anaconda's proposal includes an underground mine and a mill designed to process about 1,000 tons of ore per day. Twenty-five acres of the proposed mine site lies on unpatented claims in the Custer National Forest with the remainder on private land.

The extent of future development in the Stillwater complex is uncertain since the demand for platinum and palladium has been closely linked to the automobile industry (these two metals are used in catalytic converters). The auto industry slowdown in the early eighties as well as large imports of foreign platinum have resulted in relatively low prices. But a cooperative application from Chevron, Johns-Manville and Anaconda Company for the Stillwater Mining Project is expected by the end of 1983.

In the past, the chromium deposits of the Stillwater complex have been mined under federally subsidized programs to build up U. S. stockpiles of strategic minerals. While significant chromium resources remain in the area, mining of chromium will probably be uneconomic in the near future.

While these deposits are of relatively low quality, these metals are of extreme industrial importance and occur rarely in the United States. Any effort to

subsidize national independence in the production of these commodities would greatly increase the probability of Stillwater complex mineral development.

Heap Leaching

Cyanide heap leaching of gold and silver is a relatively new development that has caused much concern in the state due to cyanide's toxicity. Although cyanide-based extraction itself is not new, open-air leaching, as is practiced at the Zortman and Landusky mines, has become popular recently as rising precious metal prices have enhanced the profitability of mining low-grade ores and reprocessing previously mined ores. The largest facility in the state is at Zortman, designed to leach one million tons of ore per year (and scheduled for a major expansion).

Gold and silver-bearing ore is mined, hauled to the leach site, and placed upon elevated "pads." A sodium cyanide solution is then sprinkled over the top of the pad, usually with an irrigation-type system. Sodium cyanide dissolves the gold and silver, and the solution percolates through to a drainage system, which leads into a "pregnant pond." From there, the solution moves to another tank where additional chemicals precipitate the gold and silver.

Concern about heap leaching centers around potential contamination of surface and/or ground waters by the leachate, which can be rich in sodium, calcium cyanide and other metals. Structural failures of the solution ponds and seepage from the leach pad or collection ponds can result in toxic concentrations of these substances in local water supplies. Two such instances have occurred in Montana, both at Marysville. The seeps have resulted in fish kills in Silver Creek.

In the event of an inadvertent discharge, however, the released cyanide rapidly oxidizes and is reduced to a less toxic compound. Nonetheless, any large discharge from a leaching operation could potentially have a serious impact on the nearby water.

To minimize the hazards, heap leaching operators must undertake measures designed to prevent leakage into the water table, and ensure that collection ponds are capable of containing runoff from heavy rainfall or snowmelt. The DHES requires leaching operators to inform the Water Quality Bureau of their activities. The department may also require groundwater monitoring by the operators. Smaller operations, however, may not be required to monitor for groundwater leakage when they are in areas of unsusceptible aquifers.

Two of the three largest gold and silver mines in the state—the Zortman and Landusky mines in Phillips County—both use the heap leaching method of ore processing. The third, Placer Amex's Golden Sunlight Mine in Jefferson County, does not. Amex's plans call for conventional cyanide leaching with cyanide-bearing tailings disposal in a 160-acre tailings pond. Placer Amex will recycle cyanide by pumping processing solutions from the pond back into the mill's leaching containers.

Heap leaching remains a particularly attractive method for recovering gold from old tailings piles containing previously uneconomical low-grade ores. In 1981 at least 14 plants in Montana used or were planning to use the process. Only a few of these operated during 1982 because of depressed precious metal prices. Significant increases in future gold prices will undoubtedly revitalize many of these operations, especially in historic districts with large reserves of low-grade ore.

Oil Shale

The Heath formation, an oil shale of Mississippian age, is distributed over more than 2,700 square miles in central Montana. The Heath formation contains potentially valuable deposits of vanadium, selenium, nickel, zinc and molybdenum, as well as reserves of hydrocarbons. In 1981, the U. S. Geological Survey estimated these deposits to be four times as large as Colorado's Green River oil shale. As a result, a flurry of claims were filed, carving up much of the area. Uncertainty arose over the legal status of such claims, since oil shale is not locatable (claimants do not own the minerals, but lease the deposits from the federal government). But the potentially valuable metals within the shale have enabled claimants to file on metalliferous ores. So far, claims cover about 15,000 acres, and they have not been ruled invalid.

The Montana Bureau of Mines and Geology considers such claims to be premature. Levels of available hydrocarbons in the shales vary and, although the richest zones may be economically attractive to synfuel developers, the extent of these areas remains unknown. MBMG believes that nickel is the most likely commodity the Heath formation will produce.

Potentially attractive to developers are the large areas amenable to surface mining. Desborough *et al* also suggested in 1981 that solution extraction of hydrocarbons and metals by steam injection might be feasible in the Heath. However, it is likely that the rock is too impermeable for such techniques.

Under certain economic conditions, large areas of

the Heath formation might become commercially viable for development. The MBMG and the USGS cooperated on field studies of the Heath in 1982. Mapping and sample analyses will provide a better determination of the distribution of hydrocarbon and metal values in these shales.

Troy-area Mining

The largest new copper/silver mine in the state is ASARCO's development in Lincoln County. Known as the Troy mine, this facility is operating near its capacity of 8,500 tons of ore per day. The Troy mine employs over 300 people in Lincoln County, which has one of the highest unemployment levels in the state. The mine is expected to operate about 16 years. In addition to this mine, ASARCO has conducted core drilling and other testing at its Chicago Peak claim in the area. Another company, U. S. Borax, has carried out similar exploration on claims immediately east and west of the Chicago Peak claim. All of these activities are wholly or partially within the Cabinet Mountains Wilderness.

Exploration by these and a number of other companies has occurred to the west, in or adjacent to the proposed Scotchman's Peak Wilderness Area, and also in various other parts of the Kootenai National Forest, and in northern Lolo National Forest in the Vermillion River area.

ASARCO's Chicago Peak deposit and the adjoining U. S. Borax blocks are thought to be very similar to the Troy mine, which has continued operations during a period of exceptionally poor economic conditions for copper. Under the provisions of the 1964 Wilderness Preservation Act, the companies in the area must soon make decisions on future developments. Many people believe that ASARCO is likely to propose a mine at Chicago Peak in the near future. Exploration programs in other areas are less advanced than the Cabinet Wilderness projects.

Any mines developed in these deposits will probably resemble the Troy mine: large-volume underground mines with associated crushing and flotation mills and tailing ponds.

Resources

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COAL

The United States possesses 27 percent of the earth's known coal resources. According to the U.S. Geological Survey, the total identified coal resource in the United States is about 1.7 trillion tons, of which 285 billion tons are recoverable under existing technologies. Current domestic coal production now stands at 700 million tons per year, leaving the United States, under any likely consumption scenario, with enough coal to last at least 100 years.

Geographically, U.S. coal resources are evenly divided between eastern and western coal provinces. Western coals tend to be lower in sulfur content, making them cleaner burning, but they are also lower in heat value. Thus, while 54 percent of domestic coal by weight is found west of the Mississippi, western coals contain only 30 percent of the total energy value of U.S. coals.

Montana possesses the largest recoverable coal reserve in the U.S. and ranks second in total coal resources among all coal-producing states. According to the U.S. Bureau of Mines classification system, Montana coals form part of the Fort Union and Powder River Basin coal regions of the Northern Great Plains Coal Province. Fort Union coal is lignite, and its low heat value (averaging 6,700 Btu per pound) makes its rail shipping uneconomical. Thus 97 percent of North Dakota's coal production is consumed at minemouth power plants. The Powder River Basin coal of Montana and Wyoming is subbituminous in rank (8,500-9,500 Btu per pound) and therefore it is shippable to out-of-state markets. Powder River Basin coals are typified by extremely thick seams, thin overburden and low mining and reclamation costs. Montana and Wyoming together possess 40 percent of the demonstrated coal reserves in the U.S. Strippable reserves in the Powder River Basin amount to 57.5 billion tons, of which more than 11 billion are committed to mining companies under existing federal leases.

Markets for NGP Coal

Interest in Northern Great Plains coals (NGP) intensified after passage of the federal Clean Air Act in 1969 and the subsequent enforcement of State Implementation Plans (SIP) and New Source Performance Standards (NSPS) through 1976. Under early

ENERGY RESOURCES AND FACILITIES OF MONTANA

Demonstrated Reserve Base (Billions of Tons)

Rank	State	Underground	Surface	Total	Recoverable Reserves
1	Montana	71.96	49.61	121.57	75.27
2	Illinois	53.13	14.84	67.97	38.44
3	Wyoming	31.65	23.72	55.37	34.80
4	West Virginia	33.46	5.15	38.61	20.85
5	Pennsylvania	29.30	1.53	30.83	15.88
6	Kentucky	17.58	8.42	26.00	15.53
7	Ohio	13.09	6.14	19.23	11.46
8	Colorado	12.47	3.79	16.26	9.27
9	North Dakota	--	10.15	10.15	8.12
10	Indiana	8.94	1.77	10.71	5.89
11	Missouri	1.42	3.60	5.02	3.59
12	Utah	6.28	.27	6.55	3.36
13	Alaska	5.42	.74	6.16	3.30
14	New Mexico	2.15	2.45	4.60	3.03

Source: U.S. Geological Survey

SIP and NSPS guidelines, many utilities in the Midwest believed they could meet sulfur dioxide emission standards without installing costly flue-gas scrubbers, provided that they used low-sulfur NGP coals. Other utilities sought to reduce pollution control costs by blending NGP coals with high-sulfur coals mined nearer the power facilities. A 1976 coal demand study conducted at the University of Montana thus concluded that federal clean air standards were the largest single determinant in predicting the future market area and demand for NGP coal.

Federal Clean Air Act Amendments in 1977, however, reduced the importance of emission standards in the demand for NGP coal, since Congress specifically rejected the use of low-sulfur fuels as a means of meeting the Revised New Source Performance Standards. Nevertheless, interest in the low-cost NGP coals remains high as western coal producers seek to satisfy the growing demand for long-term, large tonnage contracts that now typify utility fuel preferences.

Presently, NGP coal is used by utilities in 22 states, mostly in the upper Midwest and Southwest. Most existing coal deliveries from NGP mines were contracted for during the pre-1977 air quality compliance periods. Unlike Fort Union lignites, which are normally burned near the mine sites, only 12 percent of Powder River Basin coal is consumed at minemouth power plants. The electricity thus produced is used by utilities in seven states, including the three NGP coal-producing states. An additional 15 states receive NGP coal by rail. Most of the 33 million tons per year currently produced in Montana is shipped to Minnesota, Illinois, Michigan and Wisconsin. The next table summarizes 1979 deliveries of NGP coal to an 18-state market area.

Since 1970, approximately half of the national increase in coal production has occurred in the NGP Coal Province. While most of this new mining activity has occurred near Gillette and in the South Powder River Basin of Wyoming, significant production increases have also occurred in the Powder River Basin of Montana and North Dakota. By 1979, 26 mines were operating in the NGP Coal Province, producing 96 million tons per year (tpy). As recently as 1976, NGP production stood at only 15 million tpy.

Production Estimates

As recently as 1977, federal energy planners were predicting an 80 percent increase in national coal production (to 1.2 billion tpy) by 1985. Assuming that the strippable, low-cost coals of the Northern Great Plains would continue to provide half of the nation's incremental production, NGP coal production was expected to rise to about 250 million tons per year in 1985. These forecasts, however, were incorrect. Slower than expected growth in electricity demand coupled with the failure of federal policy to encourage

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3	Wyoming	31.65	23.72	55.37	34.80
4	West Virginia	33.46	5.15	38.61	20.85
5	Pennsylvania	29.30	1.53	30.83	15.88
6	Kentucky	17.58	8.42	26.00	15.53
7	Ohio	13.09	6.14	19.23	11.46
8	Colorado	12.47	3.79	16.26	9.27
9	North Dakota	--	10.15	10.15	8.12
10	Indiana	8.94	1.77	10.71	5.89
11	Missouri	1.42	3.60	5.02	3.59
12	Utah	6.28	.27	6.55	3.36
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1979 Deliveries of NGP Coal (Thousands of Tons)

Destination	Origin: Powder River MT	Origin: Powder River WY	Origin: Fort Union MT and ND	Origin: Fort Union ND	Total	Percent by weight of NGP
Arkansas	-	1,557	-	-	1,557	1.8
Colorado	-	2,734	-	-	2,734	3.1
Illinois	4,107	2,570	-	-	6,677	7.7
Indiana	813	610	-	-	1,423	1.6
Iowa	180	5,631	-	-	5,811	6.7
Kansas	6	5,087	-	-	5,093	5.9
Michigan	3,727	-	-	-	3,727	4.3
Minnesota	11,451	-	-	699	12,150	14.0
Missouri	-	962	-	-	962	1.1
Montana*	3,207	-	304 (MT)	3,511		4.0
Nebraska*	-	2,088	-	-	2,088	2.4
North Dakota*	3	-	168 (ND)	9,601		11.0
Ohio	-	3,648	-	-	3,648	4.2
Oklahoma	-	4,368	-	-	4,368	5.0
South Dakota*	-	260	-	2,477		3.1
Texas	1,608	8,640	-	-	10,249	11.8
Wisconsin	2,719	2,016	-	-	4,735	5.4
Wyoming	-	5,861	-	-	5,861	6.7
Subtotal						
NGP states	3,210	6,121	472	11,907	21,710	25.0
Non-NGP states	24,612	39,911	-	699	65,222	75.0
Total	27,822	46,032	472	12,606	86,932	100.0

Source: Duffield and Silverman, 1982.

* NGP coal producing state.

the rapid conversion of oil and gas-fired utility boilers to coal have created a "soft market" for coal in the United States. The market area for NGP coal closely follows the national trend of reduced demand.

Recent production estimates for NGP coal by 1990 vary widely. In 1981 the Department of Energy predicted, for purposes of prescribing coal leasing targets, that NGP production would range between 226 million and 444 million tons per year by 1990. ICF, Inc., a private contractor, predicted a slightly lower scenario of 190 to 414 million tpy. However, a University of Montana study, funded by the Office of Surface Mining, forecast a range of 151 to 210 million tpy by 1990 and noted that "...we would have difficulty constructing a set of conditions that could generate a forecast of 444 million tons in 1990." Moreover, the Montana University Coal Demand Study predicts that under current air quality and transportation cost increases, the 21-state NGP coal market will shrink to 12 states by the year 2000 as other western coals and interior province coals become cheaper to utilities in the Midwest and Southwest.

Using 1979 NGP production of 96 million tons as a base, it is extremely unlikely, given the softness of the national coal market, the recent deferral of plans to build federally subsidized synfuel facilities, and the lead-time required to site new large coal mines, that NGP production will rise above 200 million tpy by 1990. Existing contracts in 1980 called for 182 million tons by 1990; however, the University of Montana study suggests that contracts for 40 million tons may be cancelled due to decreased electricity demand and the deferral of utility coal conversion programs.

The chief factors affecting the growth in NGP coal demand are electricity demand, rail transportation costs and mining labor costs. Major changes in air quality regulations and utility fuel-switching could also have major effects on the demand for NGP coal. One factor, overlooked by many analysts, is the potential effect of coal slurry pipelines in expanding the market for NGP coal.

More than one-half of the delivered price of Northern Great Plains coal is its shipping cost, and while unit trains are the most economical method to move

Montana Coal Production: 1979-1983

Name of Company	Name of Mine	County & Town	1979	1980	1981	1982	1983
Decker Coal Company	East Decker Mine	Big Horn Co. Decker	5,897,433	5,576,607	5,350,113	4,914,970	5,040,018
Decker Coal Company	West Decker Mine	Big Horn Co. Decker	7.067,374	5,616,695	5,331,626	4,884,920	5,308,799
Knife River Coal Co.	Savage Strip Mine	Richland Co. Savage	305,143	305,578	204,492	171,556	206,543
Long Construction Co.	Rosebud Mine	Rosebud Co. Colstrip	11,725,558	10,401,972	10,352,966	9,424,857	9,544,062
Morrison-Knudsen Co., Inc.	Absaloka Mine	Big Horn Co. Hardin	4,947,608	4,905,262	4,450,296	4,158,578	3,868,844
P & M Coal Company	P M Surface Strip	Musselshell Co. Roundup	11,692	11,189	7,404	15,141	11,655
Peabody Coal Company	Big Sky Mine	Rosebud Co. Colstrip	2,457,633	2,964,359	3,193,570	2,891,428	2,571,861
Spring Creek Coal Co. (NERCO)	Spring Creek Mine	Big Horn Co. Decker		95,634	4,368,885	1,352,181	2,102,606
Storm King Coal Mining Co. (Divide Coal Co. mid-1982)	Storm King Mine	Musselshell Co. Roundup	9,464	8,571	8,165	8,062	5,896
Coal Creek Mining Co.	Coal Creek Mine	Powder River Co. Ashland	29,876	64,398	64,142	16,608	
Beartooth Coal Co.	Brophy #2 Mine (Underground)	Carbon Co. Red Lodge	715	7,321			
Total Coal Tonnage Production by Year			**32,452,498**	**29,957,588**	**33,331,659**	**27,838,301**	**28,660,284**

Source: Dept. of Labor and Industry

NGP coal, rail costs have risen dramatically since 1965. At current rates of increase (4 percent per year), coal freight rates will double every 18 years. Moreover, some analysts have predicted a shortage of rail capacity for Powder River Basin coal by 1990.

These facts and expectations have led some observers to conclude that coal slurry lines may be an economical alternative to unit trains, moving as much as 125 million tpy by 1990 in the U.S. Some of the more viable current proposals for coal slurry lines appear to originate in the West: Arizona to Nevada (Allen-Warner Energy Systems), Wyoming to Texas (the Wytex Project), and Wyoming to Arkansas, Oklahoma and Louisiana (Energy Transportation Systems, Inc.).

One study suggested that while slurry lines will probably not affect the rate of coal development on a national level, slurry lines originating in western coal regions might greatly expand the market area for low-cost western coals. Viewed from this perspective, slurry lines may be the solution to a sluggish market for NGP coal by either expanding the NGP coal market or making NGP coal more economical within the existing market area. One question facing policy makers in the Northern Great Plains states should be whether they are willing to expand the market for the region's coal by giving up some water for coal slurry.

Despite frequent overestimates of NGP coal production, it must be recognized that Montana, Wyoming and North Dakota have experienced unprecedented levels of coal production since 1970. Given the enormous extent of the Fort Union and Powder River Basin coal regions and the growing demand for low-sulfur Western coal, residents of the Northern Great Plains can expect to see an approximate doubling of coal production capacity by 1990. The Office of Technology Assessment predicts that Montana mine capacity will grow by 15 million tpy in 1986, and by 32 million tpy in 1990. The table below summarizes expected mining capacity increases in Montana during the next decade, although the high sodium content of western coal may counter this trend.

Expected Capacity Increases in Montana (Millions of Tons)

Mine	Capacity* 1986	Capacity* 1991	Capacity* After 1991
Montco (Tongue River)	2.0	9.0	12.0
Young's Creek	-	8.0	
Coal Creek	0.2	0.2	
Bull Mountain	0.5	2.0	
CX Ranch (Consolidation Coal)	8.0	8.0	
CX Ranch (Peter Kiewit)	4.0	4.0	
	14.0	32.2	
Absoloka II			10.0
Tanner Creek (Crow Reservation)			24.0
Tongue River II			10.0
Tongue River III			10.0
Dominy			8.0
Bear Tooth			2.0
			76.0

Source: OTA

Environmental Concerns

In 1973, the EQC's Annual Report declared that coal development was "...the forefront issue in Montana." Concerns over mined land reclamation, power generation proposals, social and economic impacts, and changing water and land use patterns related to coal development were prevalent issues not only in Montana but in every western state faced with new coal developments.

Today, ten years after the first major rush to open the coal seams of the Northern Great Plains, researchers are beginning to report the results of long-term studies of reclaimability and impacts to land and water resources. There is still a consensus that the semi-arid Plains can be reclaimed after mining; however, several aspects of reclamation now appear to merit special attention. Two of these concern the impacts of mining on groundwater resources, and on alluvial valley floors.

Groundwater

Surface mining affects groundwater resources in two ways. First, it temporarily, or permanently alters the level and flow of groundwater in a mining area. The disruption and redistribution of aquifer materials usually alter the quality of groundwater by changing the composition of the aquifer materials. In lands where salinity is an important problem, the degradation of water quality can damage water for irrigation and stock use.

Opening a mine pit often causes the groundwater flow to change direction, sometimes even reversing it. The mine pit tends to act as a groundwater sink, and especially in instances where the mine intersects a lot of water and must be continually pumped dry, the mine creates a hydrological "cone of depression" in the water table, which may affect the level of groundwater 3 to 4 miles from the mine. Under such conditions, nearby wells can be dewatered.

In passing the Surface Mining Control and Reclamation Act of 1977 (SMCRA), Congress recognized the importance of high quality groundwater resources in the West. Key provisions in SMCRA that protect groundwater resources occur in Section 515(b) of the act, which seeks to "...minimize the disturbance to the prevailing hydrologic balance at the mine-site and in associated offsite areas and to the quality and quantity of surface and groundwater systems both during and after surface coal mining operations." The major regulations that apply to water resource protection in western mining areas concern water quality standards and effluent limitations, sediment control, protection of groundwater and recharge capacity, on-site and off-site monitoring, water rights, and stream buffer zones.

Under SMCRA, hydrology data required of mine operators are more extensive than any other type of data required for mine plan reviews. Inadequate hydrological studies or the presence of water resources that might be irreparably harmed by mining could lead to disapproval or modification of the mine plan. Since passage of the act, however, no mine plan has ever been disapproved on these grounds.

Nevertheless, the issue of groundwater depletion and contamination continues to be a concern at some existing and proposed mine sites due to the importance of groundwater supplies to local agricultural economies and fears that subsurface hydrological disturbances will create long-term impacts. In many western mining areas, the coal seam itself is an aquifer providing high quality water for domestic and agricultural uses. Removal of the coal can thus disrupt a reliable water source that in some cases is the highest quality water in the area.

In Montana, concerns with groundwater quality and quantity have risen at several existing surface mines. A controversy over the expansion of the

Westmoreland Coal Company's Absaloka Mine into an area of freshwater seeps and springs has led to the selective denial of the expansion permit until groundwater monitoring provides a better understanding of hydrology in the mining area. While the coal seams at the Absaloka Mine are not highly productive aquifers, the quality of the water makes the coal seams and overburden the source of the most desirable water in the area. Since Westmoreland began operations in 1974, hydrological monitoring has not revealed serious interruptions in the groundwater recharge capacity. Levels in observation wells have not declined, and the effects of mining so far appear to be negligible.

Western Energy Company's Rosebud Mine, in production since 1924, is the oldest operating mine in Montana, although it was shut down in the 1950s. By 1982, 10,000 acres had been disturbed. Groundwater monitoring has revealed that Rosebud spoils can transmit water at least as effectively as the undisturbed aquifers; however, some deterioration in water quality has been detected. Since water quality changes continually in the mined area, for reasons that remain unknown, it is not yet possible to conclude that mining has increased salinity or affected other characteristics.

At the West Decker Mine in the upper Tongue River Valley, hydrological impacts have been more pronounced. Overburden there contains large amounts of sodium, a natural condition that prevails throughout the Tongue River Valley. In some places, bicarbonate oversaturates the groundwater, causing the water to resemble artificially carbonated soda water. Water quality tests at the West Decker spoils have shown high levels of dissolved solids (exceeding 6,000 mg/1), with sulfate and sodium as the major constituents. In addition, water levels around the mine have declined much more than at other Montana surface mines. Declines of 10 feet have been recorded 2 miles west of the active pit, and declines up to 40 feet have been recorded nearer the pit. These data suggest that regulatory agencies will examine future Tongue River mining applications very carefully for potential hydrological impacts. In 1982, the Montana Department of State Lands rejected a petition by the Northern Plains Resource Council to declare the lower Tongue River Valley unsuitable for mining under the unsuitability criteria of the Surface Mining Act. This action by NPRC is evidence of local concern with mining of the sodic soils of the Tongue River Valley and the potential there for long-term and perhaps irreversible impacts partly caused by groundwater disturbances.

Like many aspects of mined land reclamation, the mitigation of groundwater impacts is a new and evolving field of research. Data are now being collected at the 26 large surface mines operating in the Fort Union and Powder River Basin coal regions, but broad conclusions cannot yet be stated. Groundwater impacts, like groundwater quality, vary greatly from site to site. The potential for serious long-term impacts exists at some mining areas in these coal regions—a fact recognized in the Surface Mining Act.

The potential for dissolved salts to inhibit plant growth over large revegetated areas also warrants concern by reclamation specialists and regulators. Excessive levels of sodium—a condition that occurs in some Montana coal lands—is a concern because when the sodium salts cause the swelling of clay materials, the movement of water and air into the plant root zone is impeded. This irreversible condition, which also occurs naturally, may take years to develop. It is extremely harmful to crop production.

Another major concern is that the cumulative effects of water table lowering may cause serious problems in areas with concentrated mining activities. In the past, regulatory agencies based most of their permitting decisions on the merits of individual applications, rather than looking at cumulative impacts for numerous mines in a given area. Presently, regulatory agencies prepare a cumulative impact analysis for each mining proposal. Unfortunately, there are no standarized reclamation designs to minimize groundwater quality or quantity impacts. The law, however, is explicit in this regard: the likelihood of serious reductions in groundwater quality or quantity may allow the denial of a permit to mine and render certain critical areas unsuitable for mining.

Alluvial Valley Floors

Under the Surface Mining Control and Reclamation Act, alluvial valley floors in the West are afforded special protection because of their hydrological and agricultural importance. Settlement in the West historically occurred along river and stream valleys where rich alluvial soils and adequate surface water made crop production possible. An important component in the passage of SMCRA was the recognition by Congress that in many of the important cattle lands of the West, ranching "...could not survive without hay production from the naturally subirrigated and flood-irrigated meadows located on the alluvial valley floors." The lands in the Powder River Basin of Montana and Wyoming were specifically cited as areas in which alluvial valley floors must be protected.

As defined in the SMCRA, alluvial valley floors (AVF) are those stream valleys that: are underlain by unconsolidated sand, silt, gravel and clay; have a stream flowing through them and a generally flat valley floor topography; and are important to agriculture. However, much confusion has arisen over these seemingly simple definitions. Several studies

have been undertaken to determine the extent of AVF that might be protected under the law's provisions.

Under SMCRA, mining on an agriculturally important AVF can be absolutely prohibited if it will "...interrupt, discontinue, or preclude farming." Moreover, mining can be prohibited if it would damage the hydrological systems that supply water for local agriculture. On a less agriculturally important AVF where mining is not absolutely prohibited, reclamation standards specify, among other things, that mining must be done to minimize disturbances to the prevailing hydrologic balance by preserving "...the essential hydrologic functions of alluvial valley floors." The latter is a legal provision unique to alluvial valley floors.

Recent studies suggest that only 5 percent of

AVF Studies

Study	Study area	Study area underlain by strippable coal or amount of strippable coal considered	Amount or area of strippable coal overlain by AVF
Maide and Boyles, 1976	Southeastern Montana	392,000 acres	10,500 acres
Schmidt, 1977	East-central Montana		
	Burns Creek-Thirteenmile Creek KCLA	2,640 mt	39.2 mt
	Weldon-Timber Creek deposit	857 mt	15.9 mt
	Redwater River	582 mt	46.4 mt
Hardawey, et al., 1977	Existing and proposed mines, Western United States	914,000 acres	27,000 acres

Source: OTA

AVF Undeveloped Coal Leases

Lease block	Lease block area (acres)	Acres of designated AVF significant to farming	Acres of designated AVF not significant to farming	Acres of stream valley under study as potential AVF	Name of stream
C X Ranch (Consolidated Coal)	674	245	300	—[a]	Squirrel Creek
C X Ranch (Rosebud Coal Sales)	524			—	
Pearl	541	—	—	40	Little Youngs Creek
Armstrong	80	0[b]	0	0	None
Bass	20,701	0	0	200	Clear Creek Powder River Deadman Creek several tributaries
Arvada	4,366	0	0	750	Powder River Robinson Draw Wild Horse Creek North Prong Wild Horse Creek
Lake DeSmet	9,417	0	0	10[c]	Boxelder Creek and Tributary
Belco	4,551	0	0	240	Negro and Dry Creek
Wildcat	1,571	—	—	120	Jamison Prong and Soukup Draw
Blue Diamond	40	—	—	0	None
Dry Fork	3,580	—	—	300	Dry Fork Little Powder River Prairie Creek
South Rawhide	4,782	—	—	180	Dry Fork Little Powder River Tributary Little Rawhide Creek
East Gillette	4,343	—	—	160	Donkey Creek
Federal		—	—	120	Dry Fork Little Powder River Tributary
Gulf (3)	756	—	—	—	None
East Wyodak	2,560	—	—	25	Lee Draw
North Rochelle	2,000	—	—	18	School Creek Tributary
Rochelle	8,821	—	—	120	Porcupine Creek and Tributary Holmes Creek West Fork Creek Tributaries
North Antelope	320	—	—	—	None
Antelope	4,817	—	—	480	Antelope Creek Logan Draw Spring Creek
Phillips Creek (1) & (2)	4,079	—	—	60	Phillips Creek Dry Fork Cheyenne River
Totals:					
Federal Lease Acres:	78,523	245	300	2,823	
Federal Recoverable reserves: (million tons)[d]	4,000	<100[e]	[e]	219	

[a]—: Indicates no determination made
[b]0: Indicates determination by regulatory agency that no AVFs are along indicated streams
[c]There is an estimated 400 million tons of non-Federal coal under a potential alluvial valley floor associated with this lease block
[d]Tonnage of coal calculated using average coal seam thickness and the assumption that acre ft of coal = 1,800 metric tons. This calculation tends to overestimate reserves in AVFs due to the assumption that the average coal seam thickness covers the whole area of the AVF
[e]Refers to reserves for entire AVF. No estimate available for percentage of reserves under nonsignificant to farming AVF which will be able to be mined

SOURCE: Office of Technology Assessment.

recoverable western coal will be affected by AVF provisions, with only 1 percent subjected to the absolute prohibition of mining. A 1981 Office of Technology Assessment report offered the following conclusions concerning AVF restrictions on federal coal lands:

—Only one stream valley in the West (Squirrel Creek Valley in Montana) has been identified as an AVF where mining might be absolutely prohibited in a portion of the valley.
—The AVF issue has the potential to affect more tonnage of recoverable coal than any other environmental issue; however, no adverse production effects are expected until after 1991.
—Most federal leaseblocks in the Powder River Basin are expected to include some areas designated as alluvial valley floors.
—Non-federal coal reserves are more prone to AVF determinations because of the concentration of non-federal coal in river valleys where homesteading historically occurred.

In Montana, the Squirrel Creek property in the Tongue River Valley has been identified as an alluvial valley floor, parts of which are significant to farming. Three coal companies—Rosebud Coal Sales, Consolidation Coal and Kiewit Mining and Engineering—own or lease federal and non-federal properties in the area drained by Squirrel Creek. Partly because Squirrel Creek has been designated a significant AVF, Consolidated Coal's plans to mine the CX Ranch area are now uncertain; it is likely that 100 million tons of federal and non-federal reserves below the valley floor will not be mined.

Of the 21 new federal-lease mines now proposed in the Powder River Basin, 17 are potentially affected by AVF provisions. In terms of coal tonnages, AVF designations could affect mining and reclamation procedures for 219 million tons of the 5 billion ton reserve at these proposed mines. The following table summarizes the potential for alluvial valley floor determinations at the proposed federal mines.

It thus appears that while AVF designations might affect mining and reclamation plans at most Powder River Basin mines, in practically no areas will mining be prohibited, and total tonnages affected by stricter than normal reclamation requirements will represent a small percentage (5 percent or less) of the reserves held at existing and proposed mine sites. Montana, because of its relatively large proportion of non-federal coal, may be more prone than Wyoming to AVF designations.

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OIL and GAS

Montana is the country's 13th leading oil producing state, although it accounts for less than 1 percent of total U. S. production. Petroleum production has been declining gradually over the past decade for the nation as a whole, and production in Montana has been consistent with this trend.

Slight production increases in 1981 and 1982 reversed this trend in Montana, although oil production in 1983 fell slightly. The increases reflected a burst of drilling activity in 1981 that tapped new sources of petroleum. Exploratory activity in 1983 was down sharply from the 1982 level, falling even further from the record activity in 1981.

Although Montana wells produced almost 31 million barrels of oil in 1982, the state imported 33 million barrels from Canada, North Dakota and Wyoming. Imports from Canada rose by almost 4 million barrels from 1981 levels; this increase more than offset a 500 million barrel decrease in imports from Wyoming and a 14 thousand barrel drop that virtually stopped North Dakota imports. At the same time, Montana exported over 21 million barrels of oil to out-of-state markets.

Total gas production also rose in 1982 to a level of 50.9 billion cubic feet. Natural gas production was down by 550 million cubic feet, but marketed associated gas, or gas produced with oil, was up by 1.4 billion cubic feet. The associated gas came from the deeper pay zones in the Williston Basin. Total gas production fell slightly in the first nine months of 1983.

Montana has five established areas of petroleum and natural gas production. These are the Sweetgrass Arch-Bearpaw Uplift in northern Montana, the Big Snowy Uplift in central Montana, the Big Horn Basin in southcentral Montana, the Powder River Basin in southeast Montana and the Williston Basin in northeast Montana. The first four regions usually produce from relatively shallow, Cretaceous-era rocks; the Williston Basin wells are much deeper, going into Paleozoic geological formations. The 1981 increase in Montana production was largely due to a major increase in Williston Basin production, which accounted for almost two-thirds of the total. Northern Montana production also increased moderately in

1982 Oil and Gas Activity in Montana

	1978	1979	1980	1981	1982
PRODUCTION IN BARRELS:					
Northern Montana	3,671,322	3,536,296	3,516,807	3,605,207	3,680,043
South Central	1,095,737	1,131,798	1,055,105	910,595	806,366
Central	3,343,556	3,029,397	2,612,091	2,583,690	1,496,895
Williston Basin	15,103,853	16,546,576	17,739,142	19,954,159	21,934,760
Powder River Basin	7,252,869	5,713,032	4,660,659	3,759,760	2,999,247
TOTAL	30,467,337	29,957,099	29,583,804	30,813,411	30,917,311
NUMBER OF PRODUCING WELLS:					
Northern Montana	2,052	2,089	2,212	2,280	2,455
South Central	115	112	124	132	138
Central	347	340	358	354	249
Williston Basin	863	886	996	1,080	1,360
Powder River Basin	169	165	148	174	212
TOTAL	3,546	3,592	3,838	4,020	4,414
AVERAGE DAILY PRODUCTION/WELL:					
Northern Montana	4.9	4.6	4.3	4.3	4.1
South Central	26.1	27.7	23.2	18.9	16.0
Central	26.4	24.4	19.9	20.0	16.5
Williston Basin	47.9	51.2	48.7	50.6	44.2
Powder River Basin	117.6	94.9	86.0	59.2	38.8
STATE AVG.	23.5	22.8	21.1	21.0	19.2
DEVELOPMENT WELLS DRILLED:					
Oil Wells	123	120	241	276	263
Gas Wells	223	235	203	133	145
Dry Holes	232	182	206	188	120
Service Wells					19
TOTAL	578	537	650	597	547
EXPLORATORY WELLS DRILLED:					
Oil Wells	21	35	30	126	64
Gas Wells	15	20	12	85	46
Dry Holes	179	211	260	341	248
TOTAL	215	266	302	552	358
TOTAL WELLS DRILLED	793	803	952	1,149	905
TOTAL FOOTAGE DRILLED	2,968,842	3,147,341	4,032,032	5,797,770	4,342,410
AVERAGE FOOTAGE DRILLED	3,744	3,919	4,235	5,046	4,798

Source: Board of Oil and Gas Conservation

1981, while the other three regions continued to decline.

Western Montana is currently experiencing its first contact with oil and gas activity along the "Overthrust Belt," a strip of land about 30 miles wide just east of the Continental Divide which runs the length of the state. As of yet, no oil has been discovered in this area, but exploration is continuing.

Resources

Montana Board of Oil and Gas Conservation, **Annual Review for the Year 1982**, Helena, 1983; reports from preceding years, various dates.

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RENEWABLE ENERGY

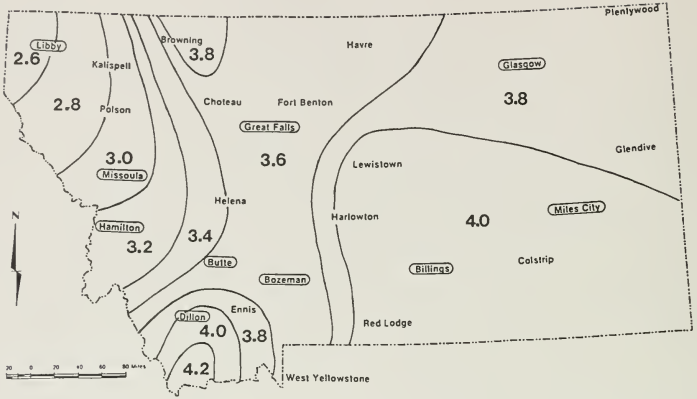
Montana is blessed with a wide variety of renewable energy resources including solar, wind, hydropower, biomass and geothermal energy. A growing number of Montanans are installing an assortment of systems to use these energy forms for heat and power production.

Renewable energy resources are unevenly distributed around the state. For example, energy potential varies in different areas of the state. The extreme southwest corner of Montana, around Dillon, enjoys the highest solar potential, followed by the southeastern and then the northeastern corners. The extreme northwest has the lowest average daily solar radiation, about 62 percent of Dillon's. These averages are based on six years of measurements of solar radiation, or insolation, at 60 stations across Montana. The measurement is part of the Solar Insolation Measurement (SIMM) program conducted by the Montana Department of Natural Resources and Conservation through its Renewable Energy and Conservation Program. The SIMM network constitutes the most thorough solar data base in the country, and has been used as a model by other state and federal agencies.

Wind is another renewable resource used in Montana. Wind generators were a frequent sight in rural Montana prior to the availability of low-cost electricity from rural electric cooperatives. Today, with rising energy costs, wind is enjoying renewed interest. It can be used to generate electricity or to perform mechanical work, such as pumping water at remote stockwells. Although wind power can seldom compete economically with conventional, large-scale hydropower, the two technologies complement each other well. When the wind is blowing, wind turbines can be used to generate electricity, allowing water reserves to be kept for release during low wind periods.

Wind power is extremely site-specific. Wind potential is generally good along the eastern slope of the Rockies, although topographic features that create strong wind tunnels can be found in several locations across the state. The most economically feasible use of wind, given the current surplus of electricity in the northwest, is in remote, off-grid applications where the cost of bringing in conventional electricity is prohibitive. The Department of Natural Resources has conducted measurements at fifty sites across the state,

Average Daily Solar Radiation: Oct.-April (kwh/m²)



Source: Montana Solar Data Manual

and is in the process of publishing the results in its *Montana Wind Energy Atlas.*

Hydropower has been used as a source of energy for thousands of years. Today there are several large hydroelectric dams in the state, and many potential small-scale hydropower sites. Western Montana has an abundance of untapped mountain streams that could be used as sources of power. Although environmental impacts of small-scale hydropower can be minimized with proper planning, they cannot be ignored. In most hydro systems, a dam is constructed which temporarily interrupts streamflow, raises the water table above the dam, and lowers the water table below. A dam can impede fish movement and cause silt deposits.

Montana's agricultural land and forests contain a wealth of biomass that can potentially be converted to useful energy forms. Crop residues, marginal crops, wood wastes and animal manure can be used to generate alcohol fuels and methane gas, and research is being done on the use of oil cropseeds in diesel additives and substitutes. Wood has become a very popular home heating fuel in Montana. However, air pollution caused by wood smoke is a growing problem, especially in the state's populated mountain valleys (see Air Quality Section).

There is widespread geothermal potential throughout Montana. Numerous hot springs can be found throughout the state, especially in southwestern Montana. The Madison aquifer underlying most of eastern Montana offers great potential for low-temperature space heating applications, while high-temperature springs and wells near Ennis, Bozeman and Poplar hold potential for the generation of electricity.

The DNRC is currently attempting to inventory some of the state's renewable energy resources through its Montana Sustainable Energy Assessment project (SEA). Previous studies have developed a good base of information about the state's solar and geothermal resources; the SEA project is focusing on the state's wind, small-scale hydro and biomass resources. Another aspect of the project is the identification of the most appropriate uses of the available resources. The cost-effectiveness and reliability of various types of renewable technologies are also being determined.

It's difficult to accurately estimate how widespread is the use of renewable energy systems throughout the state. Montana has approximately 200 renewable energy businesses, according to a 1982 survey done by the Alternative Energy Resources Organization. The Montana Department of Revenue reports that 297 residents received a state alternative energy tax credit during the 1978 and 1979 tax years. In 1979, 198 taxpayers received the credit, compared to 99 in 1978.

The vast majority of these claims were for solar systems: 277 out of the 297 claims. Seven wind systems received credits, six heat pumps, four geothermal projects, two hydro systems and two solid waste projects. Commercial solar collectors were the most popular installation, but claims for passive solar homes and greenhouses increased in 1979.

A majority of the systems were installed in western Montana, with most of these near Missoula. The second greatest concentration is in northcentral Montana, in the Great Falls area. Taxpayers in the $20,000 to $25,000 annual income bracket made the most claims in 1978 and 1979.

Energy Conservation

One of the most important energy resources available to Montanans is conservation. The efficient use of energy supplies, both renewable and nonrenewable, should be a major component of the state's energy policy. Wise use of energy will stretch the available supply of conventional fuels and reduce energy costs. Conservation is especially appropriate in Montana in light of our heating needs during the winter.

Several different programs in the state encourage Montanans to conserve energy. The state offers homeowners conservation tax credits and administers weatherization programs for low-income people. In addition, the publicly regulated gas and electric companies in the state offer their residential customers no-interest loans to finance conservation measures.

The 1977 Legislature enacted state income tax deductions for energy conservation, allowing up to $1,800 to be deducted from an individual's income for conservation improvements made to residential buildings. The deduction increased to $3,600 for efficiency improvements made to non-residential buildings.

According to the State Department of Revenue, 21,123 taxpayers took advantage of the conservation tax deduction in 1978. This was equal to 3.3 percent of the returns filed that year. The following year, the claims increased to 24,560, or 6.7 percent of the returns.

Two-thirds of the conservation claims during the first two years of the program were for insulation expenses, making this the most frequently claimed improvement. Storm windows and doors were next at 37 percent. Caulking and other types of weatherization were listed on 18 percent of the returns, glass fireplace doors on 12 percent, and insulated siding on 2 percent. Conservation deductions were more frequently taken by people making under $25,000 a year than those making over that amount.

The 1981 Legislature changed the tax deduction to a tax credit. This change benefits the public, for it enables taxpayers to deduct a portion of their conservation expenses from their taxes owed rather than from their taxable income. This new tax credit is equal to the lesser of $150 or 5 percent of the expenditure for residential buildings, and $300 or 5 percent for non-residential buildings.

The State Department of Social and Rehabilitation Services (SRS) currently operates a federally funded weatherization program for Montana's low-income population. The state received $2.9 million in weatherization funds during fiscal year 1982 from the Department of Energy (DOE) and the Department of Health and Human Services (HHS). It's estimated that there are between 27,900 and 43,000 low income households in Montana, and to date 14,000 homes have been weatherized since the program began in 1974. An average of $430 in conservation materials has been installed in each of these homes.

A recent significant change in the weatherization program occurred during the 1981 Special Legislative Session. Prior to that time, nonprofit Human Resource Development Councils (HRDC's) were in charge of administering the programs at the local level. However, during the 1981 Special Session, the legislature gave counties the option of taking over these programs and administering them through local welfare offices. To date, about 22 counties have decided to take over the program's operations, while the rest of the counties are allowing the HRDC's to continue to operate the programs.

Utility Programs

In the last five years, two federal laws have required publicly regulated utilities to become actively involved in conservation and renewable energy. The National Energy Conservation Policy Act of 1978 requires utilities to provide their residential customers with energy audits and referrals to help their customers arrange for both the financing and the installation of cost-effective conservation measures. The Energy Security Act, passed in 1980, expanded

the role utilities can play in promoting conservation and renewables. In addition to the audit and referral services, regulated utilities are now allowed to provide financing, materials and installation for their customers. Small commercial buildings and multi-family housing units are now also eligible for the program.

Montana Power Company (MPC), Montana-Dakota Utilities (MDU) and Pacific Power and Light (PP&L) all offer conservation audits and no-interest loans to their residential space-heating customers. However, none of these programs has been widely used yet by residential customers.

MPC, the largest energy utility in the state, currently offers its residential space-heating customers four-year loans of up to $2,000 for efficiency improvements that have payback periods of six years or less. Included among the eligible improvements are attic and ceiling insulation, replacement of broken windows, storm windows and doors, caulking and weatherstripping, clock thermostats, outside air ducts for gas appliances, and repair or replacement of worn or damaged heating systems. In the first 30 months of the program, only 10 percent of MPC's eligible customers received audits and 40 percent of those took out utility loans. The average loan during this period was $818.

Participation levels in the PP&L and MDU programs have also been low. MDU serves much of eastern Montana and its program is similar to Montana Power's in most respects. However, the MDU program has a $1,500 loan ceiling with a three-year repayment schedule. As of June 30, 1982, MDU had performed audits on 6 percent of its eligible customers, with 13 percent of those audited receiving utility loans. The average loan was $657.

The PP&L program significantly differs from the two previous programs. PP&L, which serves the Libby and Kalispell areas, does not require its residential customers to repay their no-interest loans until the improved property is sold. There is no specific ceiling on the loan amount. Amounts are tied to the expected energy savings for each residence. In the first three years of the program, 13 percent of PP&L's customers received audits, and 28 percent of those audited took out loans. The average loan amount was $669.

Resources

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AGRICULTURE

Agriculture plays a major role in Montana's environment. About 75 percent of Montana's land is used for agriculture, either as cropland or as grazing land. Agriculture is the largest user of the state's water, accounting for more than 95 percent of all withdrawals. Agricultural practices are crucial determinants of soil conservation, wildlife habitat and air and water quality. And agriculture is a major contributor to Montana's rural "quality of life."

The relationships between agriculturalists and environmentalists have not always been harmonious. Recent newspaper stories have told of controversies over pesticides, such as Endrin and Compound 1080; over water reserved for instream flows or irrigation; over electric rates for irrigators; and over federal land grazing policies and fees.

But there are many examples of cooperation between these two interests, and many of these may have even greater potential for the future: the development of gasohol and other biofuels; soil conservation measures against saline seep and erosion; reclamation requirements for strip mines; cooperative access programs for recreationists; and wildlife habitat improvement on agricultural lands.

Readers who are particularly interested in the role of agriculture in Montana's environment should read the EQC's Fifth Annual Report from 1976, which focuses in part on agriculture as a renewable resource use.

Agriculture has long been recognized as one of the mainstays of Montana's economy. It's one of the leading employers in the state, second only to manufacturing among private sector industries in generating personal income. As one of the state's largest private industries, agriculture brought nearly $1.5 billion in cash receipts into Montana in 1981.

Shifts in weather and uncertain market conditions can cause wide fluctuations in yearly cash receipts from agriculture. Receipts in 1981, for example, were up $80 million from 1980 totals. In eight recent years (1974-1981), annual receipts from agriculture have averaged about $1.2 billion, with crops accounting for $637 million and livestock averaging $582 million.

Two products dominate Montana's agriculture: wheat and cattle (including calves). In the eight years from 1974-1981, wheat averaged 37.7 percent of cash receipts, while cattle and calves averaged 40 percent. Montana was the fourth leading wheat producing

state in the nation in 1981; it was the twelfth leading cattle and calf state. Montana also is the nation's fourth leading barley producer, the tenth leading hay producer, the seventh largest sheep producer and the eighth largest wool producer.

When we compare combined livestock and crop receipts by counties, northcentral Montana ranks as the leading agricultural area in the state. Chouteau, Hill and Fergus counties rank one, two and four, respectively, in average annual cash receipts from agriculture from 1974 to 1979. Chouteau and Hill led in crop receipts; Beaverhead, Yellowstone and Fergus counties led in livestock receipts.

Of the 73 million acres of agricultural land in Montana, about 85 percent is privately owned. The federal government owns over 10.5 million acres of rangeland in the state, and the state government owns another 250,000 acres of grazing land.

About 55 million acres, or about 76 percent, of the state's agricultural land is used for grazing; around 81 percent of that, or 44.5 million acres, is in private ownership. There are 16 million acres of cropland in Montana, which accounts for 22 percent of all agricultural land; virtually all of this is privately owned. The remaining 2 percent is used for farm houses and structures, roads, ponds and other uses.

Forty percent, or 24 million acres, of Montana's nonfederal agricultural land is classified as "good." This land is defined as being suited for continuous cultivation and readily adaptable to wide range of uses. Fifty-three percent of this good farmland is in crops, while 47 percent is used for range and pasture. Only 1.2 million acres of this good farmland is classified as "prime," and all of this acreage is irrigated. The short growing season and the lack of water are the two primary factors that limit the amount of prime farmland in the state.

Another 17 percent, or 10.4 million acres, of private farmland is considered to be "marginal" for raising crops. Most of this land is used for grazing, although 1.9 million acres is being used to grow crops.

And 40 percent of private agricultural land in the state is classified as "poor," being unsuited for cultivation. Twenty-five million acres falls in this category, which is used almost entirely as rangeland.

Erosion

Several national studies published in the last decade reinforce the notion that America's topsoil is being depleted at an alarming rate. The Soil Conservation Service conducted a National Resource Inventory in 1977, concluding that, on the average, 4 billion tons of topsoil are lost annually to wind and water erosion, with the most severe problem in the midwest Corn Belt. At that rate, on a uniform basis across the country, it would take less than 100 years for our entire cropland base to be lost.

The U.S. Department of Agriculture considers five tons per year as the maximum rate of soil erosion an average acre of land can withstand without losing its long-term agricultural productivity. According to the SCS study, the loss of five tons per acre per year translates to the loss of one inch of topsoil every 30 years. Twenty-six percent of Montana's cropland, or 4 million acres, is eroding more rapidly than this rate; the national average for cropland is 23 percent. About 8 percent of Montana's rangeland, or 3.1 million acres, is eroding more quickly than the five tons per acre per year standard; the national average for rangeland is 11 percent.

Most of the severe erosion of Montana's cropland is caused by wind. High winds are commonplace in the Great Plains during most of the year. Wind erosion is a major problem all along the Highline in Montana, as well as in the eastcentral and southcentral part of the state. In 1980, Montana had the second worst wind erosion problem in the nation. Wind erosion affects cropland to a greater extent than it affects grazing land, since cropland often lacks an adequate ground cover after harvest to help anchor the soil. Also, much of the cropland receives little moisture and a dry soil is more likely to be blown away by strong winds. Twenty-two percent of the state's cropland is subject to wind erosion rates of at least 5 T/A/Y, while none of the state's rangeland experiences wind erosion at this rate.

Sheet and rill erosion caused by moving water are far less severe problems for Montana's agricultural land. The lack of moisture over much of the state's farmland is a major reason for this. Only 4 percent of the state's cropland and 8 percent of the rangeland experiences sheet and rill erosion rates of 5 T/A/Y or more.

Erosion generally can be controlled effectively with proper management. Wind erosion has decreased in eastern Montana with the rise of stripcropping, retaining stubble in grain fields after harvest, and planting grass barriers and shelterbreaks. Leaving a protective cover on the surface of fields can reduce water erosion by up to 90 percent on many soils. And effective management to prevent overgrazing will help lessen both water and wind erosion on grazing land.

As part of the NRI study in 1977, the SCS assessed the conservation treatment needed for different types of agricultural land. Almost 7 million of Montana's 15.4 million acres of cropland are in need of conservation improvements. The vast majority of this land requires erosion control.

Montana is rated as having little or no nonfederal range condition problem by the SCS. Fifty-four percent of the state's private rangeland is in excellent or good condition (which is defined as more than 50 percent of the present plant community being in the climax stage for that site). Thirty-nine percent is in fair condition (26-50 percent in climax), and 7 percent in poor condition (25 percent or less in the climax stage). The corresponding national averages are 40 percent excellent or good, 42 percent fair, and 18 percent poor.

Resources

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Montana Dept. of Natural Resources and Conservation, Conservation Districts Division, **Resource Conservation Plan 1981-1985,** Helena, 1981.

U.S. Soil Conservation Service, **Soil and Water Quality in Montana,** Bozeman, 1981; **Montana's Soil and Water Conservation Problems,** 1982.

NOXIOUS WEEDS

The spread of noxious weeds across Montana and the surrounding states is a significant environmental problem. More than 250 alien weed species have been identified in this region and approximately 100 of these may be continuing to expand their range. Although weed problems are not new, their impact on nearly all types of lands is increasing. Weeds are causing an increasing loss of agricultural productivity at the same time that the costs and difficulty of weed control are accelerating. Noxious weeds cause a multi-million dollar loss to Montana's agriculture each year. This does not include the costs of herbicides, time, labor, and fuel expended in their control. Some noxious weeds are problems in wildlands where they have an impact on the productivity of forage for wildlife. Weed growth also has interfered with the use of parks and other recreational lands. The situation in Montana is particularly difficult due to the large acreage that must be managed for weeds. The cost of weed control can sometimes exceed the productive value of the land.

Weeds normally serve a useful role in the natural succession of disturbed plant communities. Native weed species are generally the first plants to cover disturbed soil surfaces and stabilize soil and moisture conditions. These plants are eventually replaced by desirable grasses or other more valuable forage species. However, many of the weeds that are currently a problem are exotic species, introduced from other regions of the world. Natural controls, such as insects, are not present to limit their growth. Thus many of the exotic noxious weeds are able to expand their range even into well-established stands of vegetation.

Problem Species

Although there are a large number of weed species present in the state, the most prevalent problems are caused by only a few species.

Leafy Spurge *(Euphorbia esula)*

This species was first identified in Montana between 1911 and 1920; it has now spread to nearly every county. It has infested approximately 500,000 acres in Montana and approximately two and one-half million acres in 25 other states and several Canadian provinces. Livestock, except sheep, will avoid leafy spurge. Hay crops containing this weed are of reduced value. Once established, the stands of leafy spurge are particularly difficult to control and they require repeated treatment over several years.

Knapweeds *(Diffuse knapweed, Centaurea diffusa; spotted knapweed, C. maculosa; and Russian knapweed, C. repens)*

Knapweed is a prevalent species throughout western and central Montana, but stands have been found as far east as Glendive. This weed has infested nearly 1.6 million acres ranging from prime farmland in the valleys to marginally productive lands in the high mountain areas. It is a special threat to rangeland and livestock producers. Knapweed invades nearly any disturbed soil area, but it also invades established range lands, especially during a drought. Once established, knapweed crowds out native species due to its superior early spring growth and its avoidance by foraging livestock.

Experimentation with knapweed control by range specialists at Montana State University indicates that knapweed can reduce the carrying capacity of a range by more than 50 percent. These projections estimate that knapweeds are costing Montana ranchers approximately 640,000 animal-unit-months per year or approximately $7,680,000 annually. This figure does not include the costs of control efforts.

In addition to leafy spurge and knapweeds, infestations of the following weeds are also serious in many locations: Canadian thistle, musk thistle, field bindweed and kochia. Each of these species presents special problems and requires special control efforts.

Control

Like most other environmental problems, the cost of preventing adverse conditions is much less than providing a cure. It is possible to minimize weed infestations by management practices that maintain vigorous competitive range plants and the use of weed-free feed and clean crop seed. Proper cleaning of heavy equipment and farm mchinery will also minimize the spread to other locations. Chemical controls are the most effective means of eliminating or reducing existing stands of weeds. However, the appropriate chemical, application rate and time of application all influence the success of treatment. Herbicides, like any other pesticide, can have serious side effects on non-target plants or other organisms if not used properly. Because of cost and hazard, it is extremely important that herbicide applicators are well trained.

Biological Control

Because many of the weed species of concern were introduced from other regions of the world, they do not have natural controls (parasites, predators or pathogens). Biological control is a deliberate use of natural enemies of the plants to reduce weed populations to tolerable levels.

Montana started a biological control program in 1976 to identify useful control agents and introduce them into infested regions. Under the present program, administered through Montana State University, 13 insect species have been introduced against seven species of weeds. Three of these insects are increasing and spreading while the fate of the others is not certain. The most successful introductions are insects that stress the spotted knapweed and the musk thistle; there is some evidence that these are having an impact on weeds in some areas. However, it should be emphasized that biological control only serves to weaken the weed and supplemental control practices are necessary to be effective. For example, musk thistle may be weakened by a biological control agent but grass or other competing plants must be established at the same time to crowd out the weakened plants. If used appropriately, these efforts may reduce the weed damage to relatively insignificant levels.

Biological controls also offer a method for weed control in environmentally sensitive areas. Established stands of weeds in these areas may be significantly reduced and their spread held in check by biological controls.

Although development of biological controls is a long-term process, investment in such research and demonstration projects appears to offer long-term economic and environmental benefits.

Resources

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HUMAN ENVIRONMENT

The quality of the environment for humans depends on more than just the physical aspects of our surroundings. Other fundamental elements are public health and safety; economic, education, and recreation opportunities; social equality; political freedom; and mobility. Because everyone places different values on these amenities, it is impossible to define these components of environmental quality through some simple index. On the other hand, they are too important to ignore. This report will attempt to provide some pertinent information about this much-touted but ethereal quality of life in Montana that we label the human environment.

Population

The most important variable in the human environment is the number of people and where they live. According to the 1980 United States census, Montana's population in 1980 was 786,690, up 92,281 from the 1970 level. Although this total would be insignificant for many states or even some cities, it represents a 13.3 percent decennial rate of growth, compared to a 2.9 percent rate during the 1960s. About 65 percent of that increase is attributable to more people being born than dying; the rest is the product of net migration into the state. This is a reversal of the trends of the 1950s and 1960s, when more people left Montana than moved to it. Despite the increase in population, Montanans are reproducing at a slower rate now than then. Because of these changes in demographic trends, the composition of Montana's population is changing. While the percentage of Montana's population over the age of 40 has remained relatively stable, a larger proportion of Montana's population is now in the 20 to 30 age bracket and a smaller share is in the under 20 age bracket. The increase in the 20 to 30 bracket is probably due to immigration and the post war baby boom; the decrease in the younger bracket is probably due to the lower fertility rate. In any event, assuming the growth rate of the 1970s continues into the 1980s, Montana's population today probably exceeds 800,000.

By race, Montana is predominantly Caucasian, but

other races are increasing their numbers more than three times as quickly. Females in Montana are increasing slightly faster than males.

Western Montana's population is growing faster than eastern Montana's, but a total of 33 counties registered population gains in the 1970s. The decennial rates of change ranged from 64.1 percent increase in Rosebud County to a 20 percent decrease in Deer Lodge County. The most widespread growth appeared in the urban centers of western Montana, with the major exceptions of Butte and Anaconda. In the east, energy development has ignited rapid growth in Rosebud and Richland counties, while Yellowstone County's protracted urban growth appears to have spilled over into neighboring Stillwater County. Moderate population gains continue in most of the counties that straddle the Yellowstone River, but declines continue in most of the strictly agricultural counties in the extreme northeast and southeast corners of the state. Statewide, the population density has risen from 4.78 persons per square mile to 5.41 persons per square mile.

The U.S. Census Bureau defines any place with a population over 2,500 as urban. With that definition, Montana's urban population grew by 12.3 percent in the 1970s compared to 9.5 percent in the 1960s. A similar comparison for the rural population is striking, because it *decreased* in the 1960s by 3.7 percent and increased in the 1970s by 14.4 percent. At the same time, and partly attributable to a change in definition, the farm population of Montana shrunk from 82,129 to 56,429 in 1980. The 1970 definition included all rural places with annual sales of $250 or more in farm products plus rural places of 10 or more acres with sales of $50 or more. The 1980 definition includes only those places from which $1,000 or more in farm products are sold annually. Since the number of people living in towns of fewer than 2,500 residents remained relatively constant over this period, the number of people living in non-farm, non-designated places grew rapidly during the 1970s, accounting for nearly 29 percent of Montana's population.

It is interesting to note that while the population has increased 13.3 percent over the decade, the number of marriages occurring between 1970 and 1980 increased by 16.9 percent. The number of divorces increased by 46.8 percent. The ratio of marital terminations to marriages over the decade grew from .4772 to .5926. In other words, the chance of any marriage ending in divorce increased from 47 percent to 59 percent. However, the figure had been higher (up to 65 percent) during a few years in that period, and it may be going down today.

Business Indicators

		1980	1981[P]	Change, percent
Employment and labor force, annual average:				
Total civilian labor force	thousands	364.8	384.9	+5.5
Unemployment	do.	22.6	27.8	+23.0
Employment (nonagricultural):				
Mining[1]	do.	8.8	11.5	+30.7
Manufacturing	do.	24.2	23.5	-2.9
Contract construction	do.	14.5	13.4	-7.6
Transportation and public utilities	do.	22.4	22.7	+1.3
Wholesale and retail trade	do.	72.3	73.7	+1.9
Finance, insurance, real estate	do.	12.9	12.9	--
Services	do.	55.1	56.7	+2.9
Government	do.	70.2	70.7	+.7
Total nonagricultural employment[1]	do.	280.4	[2]285.2	+1.7
Personal income:				
Total	millions	$6,822	$7,669	+12.4
Per capita		$8,652	$9,676	+11.8
Construction activity:				
Number of private and public residential units authorized		2,374	1,852	-22.0
Value of nonresidential construction	millions	$55.2	$85.6	+55.1
Value of State road contract awards	do.	$64.0	$61.0	-4.7
Shipments of portland and masonry cement to and within the State	thousand short tons	294	302	+2.7
Nonfuel mineral production value:				
Total crude mineral value	millions	$279.6	$305.1	+9.1
Value per capita, resident population		$355	$388	+9.3
Value per square mile		$1,900	$2,073	+9.1

[P]Preliminary.
[1]Includes bituminous coal and oil and gas extraction.
[2]Data do not add to total shown because of independent rounding.

Sources: U.S. Department of Commerce, U.S. Department of Labor, Highway and Heavy Construction Magazine, and U.S. Bureau of Mines.

Economy

Since Montana became a territory, its economy has been dominated by two industries: agriculture and mineral extraction. In 1980, gross receipts from these two activities were $1.5 billion and $1.3 billion, respectively. Manufacturing of lumber and wood products, printing and publishing, primary metals, food products, petroleum products, stone and clay products and miscellaneous commercial products added another $1 billion in income for Montana. Tourism accounted for $510 million in gross receipts in the same year. Montana's top four industries all have one thing in common. They are closely related to the rich supply of natural resources. The economy of Montana depends on this natural resource cornucopia.

This is ultimately true for all states, but in Montana the relationship is more straightforward. Montanans realize that sustaining their economy depends on sustaining a careful investment of the profits of their environment. Protecting the environment is important because it is the source of our future wealth. On the other hand, we are currently learning that the environment can be threatened when the economy is faltering. This is not a simple either/or proposition. In Montana, the economy and the environment are intertwined in a mutually dependent, symbiotic relationship. This makes economic development a more serious challenge, and may require a longer time horizon than economic planners have traditionally used.

In recent years the economy of Montana, like the national economy, has suffered from two major and persistent problems: inflation and unemployment. At the same time, per capita income has been inching upward. In the final analysis, that is probably the best indicator of real economic progress when measured in constant dollars.

Although Montanans have seen the rate of inflation fall, unemployment has risen significantly. Unemployment is much higher in some parts of the state than in others, most notably where timber and copper production have historically been the economic staples.

Poverty is a very difficult thing to define for statistical purposes. Various places have different standards of living. Historically, figures used to indicate the level of poverty in Montana are slightly higher than those of our regional neighbors. Among these states, Montana used to have the second highest rate of poverty. Significant improvement has been made since then, and Montana today ranks very near the national average. In 1980, 94,262 Montanans lived in poverty, according to federal government figures. This is 11.98 percent of the population, as compared to 13.6 percent in 1970. For Native Americans, however, the 1980 figure is 34.6 percent.

Public assistance to the poor in Montana has increased dramatically since 1978.

Education

The biggest direct expenditure by governments in Montana is for education. In 1980, state and local governments invested $544 million. In that period, 106,000 students were enrolled in elementary schools, 53,000 in secondary schools, and 26,000 in Montana's colleges and universities.

Over 75 percent of Montana's population older than 25 years possesses a high school diploma. Of this same age group, 37 percent have attended at least one year of college and 17 percent have completed four or more years. The median education is 12.7 years.

Montana has always taken great pride in its public education system. Compared to national averages, scores on national achievement and aptitude tests in Montana are consistently high. Montana has fostered a 99.4 percent literacy rate since 1970. Criticism of the education system is usually aimed at the large number of school districts that have been created at both the primary and secondary levels. Inefficiency in administration and the high per capita cost of education are the primary reasons for this criticism. Incorporation of school districts is taking place, but often against local opposition. Small rural communities take great pride in their schools. Residents of these communities identify strongly with the local school; some claim the students respond to that interest by making a greater effort. It may be that this is one reason the quality of these schools often has been so good, although per capita costs may be high. The effects school district incorporations have on local communities and education in general must be weighed against the tax impacts.

Actual enrollment in the Montana university system seems to be outpacing projections, one reason being the poor job market. At the same time, federal financial aid to college students is diminishing. This loss of financial assistance, along with the skyrocketing cost of research, is creating a major funding problem for the state. Vocational education programs exist in 112 of Montana's high schools. The state also finances five postsecondary vocational-technical centers.

Health

The health status of Montana's citizens is another subject difficult to quantify. The Montana

Department of Health and Environmental Sciences uses 13 indicators to rank areas of the state, the results of which are found in the figure below. According to these statistics, Petroleum County is the healthiest place to live in Montana, while Glacier County is the least healthy.

The incidence of reportable disease is another indicator of health. In 1979, there were no reported cases of diptheria, polio, typhoid, or tetanus in Montana. Unfortunately, there were 1,622 cases of gonorrhea, 186 cases of hepatitis, and 144 cases of shigelosis (dysentery from food poisoning). Another commonly used indicator of a population's health is the infant death rate (deaths before a first birthday in proportion to total births). Since 1970, the infant death rate in Montana has decreased by 50 percent; in 1979, only 10.7 out of every 1,000 infants died before their first birthday.

An unquantifiable component of the health environment is the quality of care and the availability of specialized medical and psychological technologies. More and more, Montanans are able to get the care they need for unusual health problems without having to leave the state. The state offers facilities for those with mental problems, the developmentally disabled, and chemically dependent residents. Hospitals in Montana's largest cities are increasingly equipped with the latest in surgical, radiological and chemical technologies.

There are 93 private long-term care facilities (rest homes) in Montana. In 1980, they operated at 90 percent occupancy. The six additional state-operated facilities operated at 74.6 percent occupancy, but they

Health Indicator Rankings: 1976-1980

Ranked according to deaths in the following categories:

1) Motor Vehicle Deaths
2) Other Accidental Deaths
3) Lung Cancer
4) Uterine Cancer
5) Liver Cirrhosis
6) Suicide
7) Homicide
8) Low Birth Weight
9) Neonatal Deaths
10) Post-Neonatal Deaths
11) Infant Deaths
12) Fetal Deaths
13) Age-Adjusted Death Rates, 1969-1971

RANK	COUNTY	SUM OF 13 RANKS
1	Petroleum	135
2	Carter	174
3	Judith Basin	186
4	Gallatin	206
4	Garfield	206
6	Prairie	208
7	Treasure	216
8	Liberty	226
9	Fallon	227
10	Stillwater	250
11	Musselshell	272
12	Fergus	279
13	Lincoln	284
14	Wibaux	297
15	Powell	312
16	Custer	316
16	Dawson	316
16	Mineral	316
19	Hill	317
20	Missoula	327
20	Yellowstone	327
22	Chouteau	328
22	Daniels	328
24	Powder River	330
25	Sweet Grass	334
25	Toole	334
27	McCone	345
28	Ravalli	350
29	Carbon	356
29	Lewis & Clark	356
31	Golden Valley	357
32	Sheridan	359
33	Richland	363
34	Madison	379
35	Cascade	387
36	Jefferson	393
37	Park	394
38	Granite	397
39	Wheatland	398
40	Deer Lodge	408
41	Valley	412
42	Flathead	432
43	Pondera	436
44	Beaverhead	441
45	Broadwater	441
46	Teton	450
47	Meagher	456
48	Lake	474
49	Phillips	491
50	Rosebud	518
51	Roosevelt	522
52	Blaine	532
53	Sanders	543
54	Big Horn	563
55	Silver Bow	571
56	Glacier	609

Source: DHES

served a more limited clientele. There are 61 licensed private hospitals in Montana, with a combined total capacity of 3,405 patients. Thus, there are 4.3 hospital beds for every 1,000 residents of Montana and 4.8 hospital beds for every 1,000 square miles. Because of Montana's immense size, a common concern is the availability of those beds.

Health care facilities are useless without trained staff. For every 10,000 Montanans, there are 13 active physicians, 24 licensed practical nurses and 61 registered nurses. There are also 454 full-time dental practitioners in Montana.

The four leading causes of death in Montana are heart disease, cancer, cardiovascular disease (stroke) and accidents (over one-half of which are vehicle-related). The rates of three of these causes of death are decreasing; the rate for cancer is gradually increasing.

Alcoholism and alcohol abuse afflict about 8.5 percent of Montana's non-Indian population, according to the Alcohol and Drug Abuse Division of the Montana Department of Institutions. Among Native Americans, the Montana United Indian Association estimates the figure is around 70 percent. About 250 deaths are caused each year by alcohol psychosis, chronic alcoholism, cirrhosis and alcohol-related accidents on the highways. Montana has the dubious distinction of ranking third in the nation in per capita beer consumption and 11th in overall consumption of alcohol beverages.

The number of legal abortions has increased steadily since record keeping began in 1975 in Montana, with 3,447 occurring in 1979. Even with these increases, the rate in Montana is substantially below the average for the nation. No reliable data are available on illegal abortions. It should also be noted that no maternal deaths have ever been reported from legally induced abortions in this state. The highest abortion rates are in Flathead, Gallatin, Lewis and Clark, Missoula and Yellowstone counties. In 1979, there were 236 legal abortions per 1,000 live births in Montana.

Suicide rates have been relatively stable in Montana. Between 1973 and 1979, 15 to 20 deaths per 100,000 persons have been recorded each year: a total of 859 deaths. Recent reports speculate the suicide rate may be increasing for housewives and in areas with severely impacted economies.

Crime

Polls have repeatedly demonstrated a national concern about the rate of crime. While Montana does not suffer crime at a rate comparable to more urbanized states, over recent years the state's trend has been upward.

The Montana Board of Crime Control publishes annual crime reports for Montana. The incidence of seven major crimes (homicide, rape, aggravated assault, robbery, burglary, larceny/theft and auto theft) are used to indicate overall crime rates.

Seven Major Index Crimes

	Offenses Reported	Rate/1000 Persons	Offenses Cleared By Arrest (%)
1977	31,900	41.9	25.9
1978	31,246	39.8	24.9
1979	34,880	44.4	24.0
1980	36,791	44.6	21.7

Source: Board of Crime Control

Crimes against property (burglary, larceny/theft, and auto theft) account for at least 90 percent of these offenses. Offenses cleared by arrest are those reported crimes for which subsequent arrests were made. The table shows that a smaller proportion of crimes each year are leading to arrests. Crimes against persons are much more likely to lead to arrests than are crimes against property. Finally, three-fourths of all indexed crimes are committed by persons between the ages of 12 and 25.

Crime rates in Montana are somewhat skewed, in that only five counties have crime rates greater than the state average. These are the most populous counties and they therefore dominate the statistics. Conversely, Carter, Deer Lodge, Garfield, Golden Valley, Petroleum, and Treasure counties all had zero crime rates in 1980.

Transportation

Montana's intercity transportation network consists of roads, railroads and airlines, which transport both passengers and commercial cargo.

The size of Montana and its diffuse population create a public transportation problem. Except on a relatively small scale, it is uneconomical for private enterprise to provide human transportation services to many areas. Therefore, Montanans depend more heavily on their publicly supported highway system than do residents of many other states.

Montana's 14,200 miles of paved highways carried 6.6 billion vehicle-miles of travel in Montana in 1980. Besides the individual transport provided, Montana roads are utilized by nine intercity bus services and 3,500 intrastate, interstate and international

commercial carriers. Montanans registered 679,532 cars, trucks and buses in 1980, even though only 599,000 drivers were licensed to use them. The Federal Highway Administration (FHWA) estimates vehicle registrations increased by 6.4 percent in 1981. Together, these motor vehicles consumed 515 million gallons of fuel on the highways in 1980. Projections are that motor fuel consumption will increase on the highways of Montana, but only slightly and much more slowly than the historical average growth.

Most people agree that Montana's roads are slowly deteriorating with decreased funding by the federal government during the last few years. The Montana Department of Highways has experienced some major changes as a result. Cuts in personnel and administrative districts may ease the budget crunch in the short run, but there is only so far the department can go in this direction. There are also many efforts to cut costs by reducing paperwork, and two are of note.

The FHWA has issued new guidelines for state reporting requirements. It expects that this effort will decrease the overall reporting burden by one-third and provide a single, clear and comprehensive document.

Second, the FHWA has recently attempted to ease its regulations governing environmental programs, especially with regard to the preparation of EISs, noise, Section 404 permits concerning wetlands, and air quality sanctions and control strategies. The anticipation is that substantial streamlining of environmental regulation can save money.

Actual construction on Montana highways occurred on 194.7 miles in fiscal year 1981 and 383.5 miles in 1982, at costs of $60.7 million and $78.1 million, respectively. Construction lags somewhat behind contracts awarded. While the number of miles of construction per year is apparently going up, many feel the progress is too slow.

A final note on Montana's highway system is that while its configuration serves travel from east to west, it often makes north-south travel difficult. With the exception of I-15, no major highways serve north-south traffic. Any remedy for this particular problem is unlikely.

Rail transport is limited to commercial shipping, with the exception of the northern Amtrak passenger route. Montana and North Dakota have been negotiating with the federal government to reestablish the southern Amtrak line, but the prospect for adding that passenger route is unknown.

Most rail service is limited to two Burlington Northern east-west mainlines, but the Union Pacific, Soo Line, and Milwaukee Road still enter the state and provide some access to out-of-state markets. While much of the state's incoming freight travels by rail, the railroads are even more important for shipping our coal and agricultural products out of the state. Rail service, especially from the BN, will therefore be of vital importance to the future of Montana.

Currently there are five major airlines that serve Montana, and two smaller airlines that serve a smaller area and clientele. Montana has 121 public-use airports and 57 fixed-base charter services.

Intracity and intraregional public transportation systems are available in many parts of Montana: the cities of Billings, Butte, Missoula and Helena; Valley, Garfield, and Powder River counties; and the Fort Peck Indian Reservation. Because of a decline in the number of taxicab companies across the state (from 33 in 1976 to 24 in 1980) and the current deinstitutionalization policy for the handicapped and elderly, most counties provide some kind of special transportation system for these people. Only nine counties have no such arrangements.

Housing

Housing characteristics in Montana improved during the 1970s. The number of rooms per home increased from 4.7 to 5.0; the number of persons per housing unit decreased from 2.6 to 2.3; and the percentage of homes owned by the people who lived in them increased from 66 to 69 percent. Also, the percentage of units lacking complete plumbing facilities decreased from 6.6 to 2.3 percent. There are still 25 Montana counties in which at least 5 percent of the housing has inadequate plumbing; Golden Valley, Judith Basin, Meagher, and Wibaux counties have over 10 percent in that condition.

The median value of owner-occupied homes increased by 332 percent and the median contract for rent increased by 232 percent between 1970 and 1980. This was good news for those who owned homes or apartment buildings, but not as good for people trying to rent or to buy. Inflation, mortgage interest rates and energy costs in the last few years have made home ownership very expensive. In fact, the number of vacant homes for sale doubled between 1970 and 1980. The housing construction industry has suffered nationally and in Montana, resulting in a slump in the timber trade in western Montana. The Montana Department of Labor and Industry's monthly estimates of new residential building permits demonstrates this point. Based on a sample of 12 Montana cities, annual new home construction decreased by 33 percent between 1979 and 1980, and by an additional 40 percent between 1980 and 1981. New residential building permits in the first quarter of 1982 were only 20 percent of the level in the first quarter of 1979.

Well over half of Montana's year-round housing units were built before 1960. Older homes may be as structurally sound as new ones, but they generally require higher maintenance costs and are likely to use

more energy. For the immediate future, it is possible that the construction industry will see more remodeling and renovation work than construction of new homes. For new homes, the trend of the 1960s and 1970s toward larger, spacious houses may be replaced by smaller, energy-efficient designs suitable for smaller families.

Civic Participation

As a general tenet of democracy, greater citizen participation is held as a virtue, and it is the government's responsibility to solicit it. Montana citizens place great importance on their participation in elections. While impact of their votes in national elections may be small, Montana has consistently ranked in the top five or six states in voter registration and participation during presidential elections, and even higher in "off-year" general elections. While the national average for people voting in general elections is under 50 percent, Montana's percentage is often over 60 percent during presidential elections. The 1982 elections exemplify this point.

	1976	1978	1980	1982
Number Registered	454,924	410,046	496,402	445,882
(% of Potential)	88.2	80.5	89.0	78.1
Number Voted	339,346	296,521	371,976	328,084
(% of Registered)	74.6	72.3	74.9	73.6
(% of Potential)	67.7	58.3	66.7	58.7

Source: Secretary of State

Public participation in Montana has a tradition of being even more extensive than the simple election of political representatives. Montanans have nurtured an initiative process since the state began. Today, the creation of state law through popular vote is not that unusual around the country. However, Montana has followed that tradition since the turn of the century. It is these populist roots that make Montana exceptional in terms of a high level of public participation.

Public Finance

Because they are charged with improving the lives of citizens, Montana's state and local governments are important components of the human environment. If

Montana Government Per Capita Revenues

	Amount	Rank among states
Total revenues	2,194.92	13
General Revenues	1,906.99	12
Federal sources	551.34	3
Montana sources	1,355.65	21
taxes	999.69	16
property	455.27	7
individual income	171.55	16
corp. income	57.92	NA
select sales	120.95	NA
motor fuels	64.93	NA
other taxes	129.07	NA
charges and misc revenue	355.96	19

28.9% of general revenue orginates from federal sources
38.3% of general revenue orginates from state sources
32.8% of general revenue orginates from local sources

Montana Government Per Capita Expenditures

	Amount	Rank among states
Total Expenditures	1,768.80	16
Education	691.48	11
local	536.24	3
university	129.21	38
libraries	7.17	26
Highways	310.62	3
Public welfare	136.94	33
Health care	96.27	42
Natural resources	92.50	4
Police	47.43	28
Fire	15.40	39
Interest	55.77	26
Financial administration	53.33	4
General control	46.35	6
Sewerage	18.24	46
Public buildings	16.30	12
Air transportation	15.33	13
Housing & urban dev.	6.48	49
Per capita debt outstanding	1,083.49	37
Per capita cash and security holdings:		
Insurance trust	703.80	20
Other	1,370.06	7

41% of general expenditures goes toward salaries
34% of general expenditures goes toward current operations
20% of general expenditures goes toward capital outlays
3.1% of general expenditures goes toward interest payments
1.7% of general expenditures goes toward assistance and subsidization

Source: U.S. Bureau of Census

these governments truly represent their constituents, they should accurately reflect the attitudes and orientations of Montanans. Issues of priority for these governments must be important to the people, and the amount of money allocated to resolving public issues and problems should reflect these priorities. Although it's a far from perfect parameter, the best indicator of government's perception of a problem is how it gets and uses resources to solve it. As most government officials freely admit, the term "government resources" should be interpreted as "money."

Montana state and local governments collected $1.94 billion in revenues in 1980, the most current figures available. The state collected 54 percent of this amount, while local governments (including counties, municipalities, school districts, and special districts) raised the rest. Of this total, $643 million is the result of intergovernmental transfers (not counting transfers between local governments). The state received $370.6 million, almost all of which came from the federal government. Local governments received just under $70 million from the federal government and $203 million from the state. Most of the latter goes to school districts, which also received $93 million from other local governments. Montana ranks third in the nation among states in per capita revenues from the federal government ($551.34). Montana governments received $227 million in revenues from the state liquor stores, publicly owned utilities, and insurance trust accounts.

That leaves 55 percent of Montana government revenues to be collected from taxes, charges and other sources. Local governments depend heavily on the property tax, while the largest tax source for state government is the individual income tax. The state also imposes selective sales taxes, license taxes and a corporate income tax. Each citizen of Montana paid just under $1,000 in taxes to state and local governments in 1980, which ranked the state 16th highest in the nation. The property tax accounts for not quite half of that, which ranks Montana 7th highest in the nation.

Miscellaneous charges and revenue accounted for $280 million, with the state and local governments receiving almost identical amounts. Charges include fees from universities, hospitals and hunting and fishing licenses. Miscellaneous revenues include the interest on investments other than the insurance trust, such as the coal tax trust fund, and the issuance of bonds.

The major differences between the ways Montana and the "average" state collects revenues is Montana's greater reliance on the property tax and lack of a general sales tax, and the amount Montana receives from the federal government. The federal government contributes 29 percent of the general revenues of the state, while 38 percent originates at the state level and 33 percent is raised at the local level.

Even more interesting is where the money goes. At the most basic level, it goes into salaries (41 percent), maintaining current operations (34 percent), capital outlays (20 percent), interest payments (3.1 percent) and assistance and subsidization (1.7 percent). Everything else receives a total of .2 percent.

In terms of direct expenditures, by far the largest at the state and local level is education; the brunt of that burden is carried by school districts. Much of the state's transfer to local governments is spent here. State expenditures for the university system rank as the 4th largest single budget item. When compared to expenditures for higher education by other states, this

Natural Resource Tax Collections

Fiscal Year 1982

Natural Resource	RITT	Severance	Metalliferous Mines	Net or Gross Proceeds	Micaceous Mines	Total	Gross Value	Taxes as % of Gross Value
Oil	5,309,304	49,523,761	—0—	64,551,241	—0—	119,284,306	1,052,333,907	11.3
Gas	491,123	2,700,704	—0—	21,823,999	—0—	25,015,826	92,490,539	11.7
Coal	1,000,195	86,186,746	—0—	13,038,973	—0—	100,226,014	389,885,112	25.7
Misc. Mines	152,912	—0—	—0—	1,308,404	10,432	1,471,748	86,124,246	1.7
Metal Mines	205,509	—0—	1,861,208	1,060,914	—0—	3,127,631	108,053,359	2.9
Total	**7,159,043**	**138,410,329**	**1,861,208**	**101,783,531**	**10,432**	**249,225,525**	**1,728,857,163**	**14.4**

Source: Montana Department of Revenue. Net or Gross Proceeds column derived from average mill levy for state, county and schools for each county, applying it to the taxable value of production, and adding them for a state total.

The severance tax figures include the Oil and Gas Conservation Board Tax and the portion of the severance tax returned to the counties. Amounts for the fourth quarter of 1982 are estimates.

expense is relatively low, but on a per capita basis it's high.

The second largest budget item for combined state and local governments is highways and roads. Funding of highways is also the source of much of the federal money that the state receives. Roads are one of the largest budget items for the state and county governments. Expenditures for local schools and state roads together account for half of state and local government expenditures in Montana. On a per capita basis, both of these expenditures rank Montana 3rd highest among the 50 states.

The next two largest budget items are public welfare and health, and hospital expenditures. Montana devotes a smaller proportion of its budget to these than do most other states (ranked 33 and 42, respectively). Both are financed primarily with state government money.

Montana seems to place greater importance on the next largest direct expenditure than other states do. This is natural resources and parks, and the state ranks 4th in the nation in per capita expenditure for them. For many states this might be considered frivolous expense, but Montana considers it an investment in the economy, with the dividends accrued to the tourism industry. The expense is shared fairly evenly between state and local governments.

Police and fire protection is a major expenditure for municipal governments, and a significant expense for counties and the state as well. The final major category of this magnitude is interest payments, with local governments generally deeper in debt than the state.

Other important budget items that seem less significant, at least in terms of dollars spent, include payments for financial administration and general control (ranking 4th and 6th among states on a per capita expenditure basis), and the low premiums paid for sewage and housing and urban development (46th and 49th, respectively).

Overall, Montana governments, especially the state, are in relatively good financial condition. They rank 37th in per capita debt outstanding and fairly high in cash and securities holdings. Montana state government bonds have been given the highest possible rating by Moody's, a leading banking rating service.

Resources

Montana Board of Crime Control, **Annual Crime Reports**, Helena, various dates.

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Montana Dept. of Administration, **1980 Montana Population Profile**, Helena.

Montana Dept. of Community Affairs, **Transportation in Montana, 1980**, Helena.

Montana Dept. of Health and Environmental Sciences, **Montana Health Data Book and Medical Facilities Inventory**, Helena, 1980; **Montana Vital Statistics, 1981**, 1983.

U.S. Bureau of the Census, reports from the 1980 Census, various dates.

MONTANA/FEDERAL RELATIONS

Montana's political boundaries do not conform to any particular physical environment; our atmospheric, hydrospheric, lithospheric and biospheric regions are shared with our neighbors. The environment is the product of forces beyond the state's political jurisdiction, and it cannot be constricted by stationary government boundaries. Montana's state government can only share responsibility for, not dictate, the quality of this environment.

Also affecting the quality of the state's environment are millions of actions of private citizens, many of which we hold inviolable from government intervention. To do otherwise, we believe, might eventually lead to the complete control of our lives by the state.

Not only are many ecological factors and many aspects of human conduct beyond the rule of government, but there are some political decisions affecting Montana over which the state government has no direct control. Montana can't tell Alberta, Wyoming or the Department of the Interior how to make decisions, even though the decisions they make might affect Montana. The efforts of Montana to maintain healthy air, water and land resources may be meaningless if other government units, especially in the federal government, refuse to implement similar controls within their jurisdictions.

Montana looks to the federal government to fulfill a variety of roles as an environmental regulator, with special emphasis on three:

(1) To establish national policies that reflect the best interest of all the country's citizens, especially:

(a) providing minimum standards to guarantee the safety and health of the environment; and

(b) insuring the conservation of natural resources and the nation's heritage;

(2) To provide a system of reimbursement for those local areas facing unfair impacts as a result of providing for the national interest; and

(3) To negotiate with other countries on minimizing international environmental problems.

Almost 30 percent of the total area of Montana is owned by the federal government, with another 5½ percent held in trust for Native Americans. Obviously, utilization of this land is of paramount importance to the people and government of Montana. The Bureau of Land Management and the Forest Service together control 88 percent of the federally managed land in Montana. This section on the federal government's environmental role in Montana will focus on these two agencies.

The amount of land in federal ownership changes. Federal agencies can dispose of land through land exchanges, sales at public auction, state school trust selections, mineral patents, the Recreation and Public Purposes Act, the Desert Land Act, the Color-of-Title Acts, and the Carey Act. The current political trend has switched from acquiring land to stave off development's encroachment on natural areas, to disposing of lands not considered economically feasible to administer. The current federal administration feels this change in policy is warranted by federal budget deficits, and hopes that these natural areas can be better protected through the public and private purchase of conservation easements. Its selection of lands suitable for disposal is still being studied.

The federal agency most likely to dispose of some of its land in the state is the Bureau of Land Management. The 1976 Federal Land Policy Management Act (FLPMA) espoused a general policy of perpetual ownership of federal lands. However, it also established guidelines for sales of BLM land under certain circumstances. The Montana office of the BLM is currently developing specific criteria to identify lands for disposal under FLPMA as part of its planning process. In addition, Montana and the BLM are negotiating over about 25,750 acres to be transferred to the state for school trust lands. About 30 individual transactions involving small tracts of BLM lands are also being processed for transfer to the state and to various local governments as part of the agency's Community Expansion/Good Neighbor Program.

The Forest Service is less likely to dispose of its land. The most significant type of potential land transfer is through exchange with the state, other federal agencies or private individuals. These exchanges would be undertaken to consolidate management units in order to make them easier to administer. It is probable that the Forest Service disposes of more lands indirectly through mineral claims than it does through its management policies.

Federal Land in Montana by Agency

Managing Agency	Acreage	% of Land in Montana
Dept. of Agriculture		
Forest Service	16,753,701	17.79
Science/Education	71,700	.08
	16,825,401	17.87
Dept. of Interior		
BLM	8,009,164	8.5
BIA (excludes Indian trust lands)	124,456	.13
Fish and Wildlife Service	1,085,152	1.15
National Park Service	1,185,779	1.26
Water Power Res. Ser.	288,460	.31
	10,693,011	11.35
Dept. of Defense		
Air Force	4,577	-
Army	6,539	-
Army Corps of Engineers	594,670	.63
	605,786	.64
Others (owning less than 1,000 acres)	1,797	-
Indian Trust lands	5,236,252	5.61
TOTAL	33,362,257	35.48

Source: U.S. BLM

Minerals

Mineral development on federal lands is the primary responsibility of the BLM. Minerals may be developed in three ways. Locatable minerals on lands that have never left the public domain are regulated under the General Mining Act of 1872. Miners have only to stake their find with identifiable markers, file a legal description of the claim with the appropriate county clerks and the state BLM office, and prove that $100 worth of work is being done on the claim every year. If the claimants want to own the surface area of the claim, they file for a patent, which requires more detailed surveys of the surface area and the ore body. As of October 21, 1982, there were 65,603 unpatented mining claims of record and 125 patented claims in effect on federal lands in Montana.

Development of petrified wood and common varieties of sand, stone, gravels and clay falls under the Material Sales Act of 1947. These materials can be sold or given away by the surface management agency, but this occurs only rarely in Montana, since sufficient quantities of these materials exist in private ownership. In FY 1980, the receipts from sales under this act in Montana were less than $5,000.

The third way minerals are developed under federal management is under the Mineral Leasing Acts of 1920 and 1947, as amended. Oil, natural gas, coal, chlorides, silicates, potassium, sodium, sulfur and sulfates, bituminous tars, sands and rocks, geothermal steam and locatable minerals under lands that have at some point left the public domain without intact mineral rights fall under the scope of these laws; they

contain four general ways to lease minerals. (1) Exploration for locatable minerals on lands that have left the public domain with mineral rights remaining with the federal government requires a prospecting permit. Upon a certifiable discovery, the prospector is entitled to a preference right lease. (2) Minerals more generally under the leasable category, if within a geologic formation recognized by the USGS as having production potential, are leased by competitive bidding. (3) A developer interested in an area outside such a formation can apply for a noncompetitive lease. (4) Finally, expired oil and gas leases can be resubmitted for lease through the lottery process, which has recently come under intense public scrutiny.

In March 1982, for minerals other than coal, oil and natural gas, there were 26 prospecting permit applications pending (19 for bentonite, 6 for vanadium and 1 for phosphorous); six lease applications pending certification of discovery (four for geothermal steam, one for bentonite and one for phosphate; and 28 leases in effect (all for phosphate). Existing leases cover 22,033 acres. Applications for leases have been filed for 5,336 acres and applications for prospecting permits for 45,651 acres.

Phosphate production from Montana federal lands in fiscal 1982 was 56,781 short tons. In the future, the production of bentonite will be a major component of nonfuel minerals on federal lands. Prospecting permits for this valuable clay are only a small indication of the level of interest in it. Several thousand bentonite claims accounting for well over 100,000 acres have also been established on lands that never left the public domain, which fall under the General Mining Act. There have been 85 patent applications on bentonite claims near Malta, Alzada and Bridger alone.

Oil and natural gas leasing can be accomplished through competitive bidding, application for noncompetitive leasing, or a simultaneous oil and gas filings lottery. As of September 30, 1982, there were 11,232 federal oil and gas leases in effect in Montana, involving 12,432,022 acres. Twenty-three of these leases were issued in FY 1982 through competitive bidding. This procedure is being used increasingly, but it is far less common than leases issued through noncompetitive applications, of which 1,710 were issued in the same period. The number of noncompetitive leases awarded had remained fairly stable for the previous five years. However, the number of people filing in the simultaneous oil and gas lottery has increased dramatically since 1980, with 1,049 leases being issued to successful applicants in FY 1982. But rarely does participation in the lottery lead to a producing oil or natural gas well. In fiscal 1980, federal lands in Montana produced 5,795,596 barrels of petroleum and 12,334,580 thousand cubic feet of natural gas.

Coal must be leased through the competitive bidding process. Before the Powder River coal sale on April 28, 1982, there were 22 federal coal leases in effect in Montana accounting for 37,584 acres of state, federal and private land. Cumulative production of the 10 producing federal leases in Montana was over 215 million tons by the end of fiscal 1982.

The coal leasing process is going through major changes. Between 1971 and 1979, no additional federal coal was leased in Montana. In 1979, a new coal leasing program established regional coal teams and regional coal leasing areas. Parts of Montana lie in two of these regions: the Fort Union Region and the Powder River Region. Under the 1979 regulations, eight Montana tracts were offered for lease in the Powder River Region on April 28. Six of these tracts, totaling 7,943 acres, were apparently successfully bid upon, but there was some controversy surrounding whether bids were commensurate with fair market value, and there were allegations that BLM's lowest acceptable bids were leaked to bidders. These leases are being reviewed by the courts.

The 1979 regulations were replaced on July 30, 1982, when notice of final rule making was posted in the **Federal Register**. The new rules were designed to streamline the process, but concern was voiced by western governors that the real intent was to reduce the role of regional coal teams, and other critics claimed that the rules would unduly accelerate the rate of coal leasing. These new regulations have also become the subject of litigation, so operations are continuing under the 1979 rules. The exact future of federal coal leasing in Montana is not known.

Mineral claims and leases on Forest Service lands entail another procedure on top of the requirements of the BLM. Before mining activity can commence, a "notice of intention to operate" has to be filed with the Forest Service. If the Forest Service determines that the operation may cause a significant disturbance to the environment, it may require a "plan of operations" detailing the mining operation and the steps the operator will take to reclaim the area once mining is completed; a reclamation bond may be required also. The plan must be approved before the operation can commence. Because of increased interest in oil and natural gas in the overthrust belt, a substantial backlog has developed in this process. Even though the ultimate decision to approve or reject leases and mining claims still resides with the BLM, the recommendations of the Forest Service are tantamount to the decision.

The federal government's role in mineral development is indeed great in Montana. More than any other actions of the federal government, national energy and critical minerals policies have the greatest potential to change this state's landscape. It is imperative that the government and people of this state have good access to the formation of these policies, and that the federal government takes heed of Montana's interest.

Grazing

Agriculture in Montana depends on the federal government for protection from flooding and erosion, financing for irrigation and stockpond projects, and the regulation of interstate transport. But most important to farmers and ranchers can be access to federal lands for forage. It can be the difference between a commercially feasible ranch operation and one that is simply too small to be economical. The federal government has a long history of allowing its grasslands to be used by private enterprise for this purpose. This traditional use has sometimes been interpreted by the rancher as little different than ownership.

This interpretation has a historical basis. In the pre-barb wire era, ranching was a highly nomadic and unregulated practice. In places like eastern Montana, cattle and sheep ranchers were the only people who had any use for the land. Nobody would buy the land without access to the water the cattle barons controlled, so the federal government allowed the ranchers a free rein. As they ran more and more livestock, the range began to deteriorate. Compounded with the Great Drought of the 1930s, the result was tremendous soil erosion and renewed government concern.

The nation's first federal grazing district was the Mizpah-Pumpkin Creek experiment in southeastern Montana. It was organized in 1926 to improve management of, and to draw revenue from, 108,000 acres of public domain, railroad grant, state school trust, absentee-owned and county foreclosure lands. In 1928, the federal government passed a special act that authorized a stockmen's association to manage these lands, to trade state for federal lands to consolidate grazing units, and to use federal lands for a nominal fee. The experiment was a success. The land was better utilized, private owners and the federal government both began to make money, and the range conditions improved. Its success is also credited as providing an impetus for the passage in 1934 of the Taylor Grazing Act.

The Taylor Grazing Act established federal grazing districts over large portions of the federal domain, and allowed the leasing of grass to stockmen with a history of use. It confined those stockmen to specific areas and regulated the number of animals they could graze. It required a permit for access to those lands and established fees for the use of the range depending on the number of animal-unit-months (AUMs) allowed. Stockmen's advisory boards helped determine the appropriate level of use of the range. The Taylor Grazing Act served as the BLM's primary framework for regulating grazing on federal lands for over 40 years.

As the nation grew, the general public began to demand to use these lands for various forms of recreation. The cry for "multiple use" was raised, but some stockmen perceived that multiple use meant less grazing, while environmentalists decried the power embodied in the stockmen's advisory boards, and argued that the government was overgrazing its land for grazing fees that were too low.

In 1976, FLPMA changed the fundamental principle by which the BLM was to manage grazing from local control to multiple use. It replaced stockmen's advisory boards with multiple use advisory boards. Prior to the passage of FLPMA, the courts had ruled that the BLM had to do an EIS for each of its grazing allotment management plans, instead of doing a single programmatic EIS. In 1978, following a long history of trying to arrive at a fair grazing fee, the Public Rangelands Improvement Act instituted a complex formula based on the 1966 fair market fee and current meat and production costs. These actions marked the end of the Taylor Grazing era in which the priority for BLM had been to benefit the ranching industry.

The conflict continues over the public rangelands. In many cases, the land in question has been managed by certain ranchers for generations. While they may not have owned the legal title to the land, they were the only ones who paid any attention to it for as much as 100 years. Today, decisions made by the BLM or the Forest Service may mean economic life or death to these ranchers. Out of these circumstances, many embraced the "Sagebrush Rebellion."

The question of public access to BLM land remains. Most of the time, grazing lease operators want only to know who is on the land, and to be able to protect their livestock and other property. There are still incidents of locked gates, but these situations probably evolve not out of government policies, but

Federal Grazing

Leases	Grazing Acres	AUMs	Animals grazed in 1981	
			Horses, cattle	sheep, goats
BLM 3950	7,981,721	1,160,711	472,133	121,710
F.S. 1216	2,590,446*	1,317,994*	239,440	59,103
total 5166	10,572,167	2,478,705	711,573	180,813

Source: U.S. BLM & FS

out of a lack of courtesy on the part of some recreationists.

In terms of the whole livestock industry in Montana, the federal lands contribution is not as great as is commonly assumed. Yet it is significant. Not all of this is utilized although actual BLM grazing is very close to the potential maximum. In general, Forest Service land is more productive.

The East Pioneers area in southwest Montana has been chosen as the site for a pilot project designed to reward leaseholders whose stewardship improves range conditions. The 750,000-acre area is composed of Forest Service, BLM and private range owners. The project is apparently shaping into a success. Perhaps it can be to range policy what the Mizpah-Pumpkin Creek experiment was to the Taylor Grazing Act: the model for a new and lasting era of cooperation in managing the range. Montanans will play a leading role in fostering such a development.

Timber

Montana ranks 6th among states in timber production from federal lands, but only 9th in overall timber production. Timber production from federal lands is of greater significance in Montana than it is in other states. Between January 1, 1977, and December 31, 1981, 2.2 billion board feet of timber was harvested on Forest Service lands. Assuming a value of $4/bd ft, its value would be in the neighborhood of $88 million.

Timber harvests from federal lands have been declining substantially during the previous five years. The primary reason for this is a poor market, but it also reflects Forest Service management giving increased importance to recreation and wildlife values. However, timber sales by the Forest Service still exceed the level of timber harvest, indicating that timber producers are simply keeping their investment growing until market conditions improve.

The BLM has doubled its timber production over the same period, perhaps signifying an only recently exploited resource. A 1974 BLM forest inventory identified three sustained yield unit areas in Montana for timber production with a total annual capacity of 11 million bd-ft. BLM timber supplies, when compared to those of the Forest Service, constitute a relatively small percentage of available timber. And the Forest Service timber accounts for only ⅓ to ½ of the total timber harvest. Like the BLM, the Forest Service underwent an extensive transition from having a single use orientation (timber) to multiple use, but it occurred a good deal earlier than BLM's shift. Forest Service lands are now subject to an intensive planning process by which all resource uses will be allocated in the future.

Water Reservations

Many Montanans don't know that the federal government owns an undetermined amount of the water in this state. The 1908 U.S. Supreme Court decision in **Winters v. United States** concerning conflicting water claims between a Montana Indian tribe and upstream water users established the principle that when they signed treaties with the U.S. government, the Indian tribes implicitly reserved a certain amount of water without which their land would be valueless. In the 1963 case of **Arizona v. California**, the court extended this principle to national recreation areas, national forests and wildlife refuges. The federal government possesses a water right sufficient to meet the needs of these lands. These reserved rights are not subject to state requirements for diversion, application for beneficial use or abandonment for non-use. The federal government generally enjoys priority rights, as the water reservation is dated to the time the federal area was created. In the 1970 **Eagle** case, the U.S. Supreme Court ruled that the McCarran Amendment forced the federal government into state water adjudication proceedings, yet the questions of volume and priority of these federal reserved rights remain to be resolved in federal court.

The implementation of the federal reservation doctrine could have a substantial impact on the economy and environment of the state. Until this issue is resolved, a good deal of doubt exists over all water rights claimed since the end of the 19th century. The most difficult question involves the quantity of water needed by the Indians and for federal lands. The best answer may be making some minimum flow requirements for water flowing through these lands.

Federal Timber Harvest (Thousands bd-ft)

	1977	1978	1979	1980	1981
Forest Service	498,862	458,560	451,685	408,619	387,285
BLM	4,095	5,088	5,417	5,598	9,060
total	502,957	463,648	457,102	414,217	396,345

Source: U.S. BLM & FS

Federal Payments

Even though Montana cannot tax federal lands, the federal government tries to compensate Montana's taxpayers for the burden it creates. Among these efforts are the mineral leasing payments, the payment in lieu of taxes (PILT), the 25 percent fund of the Forest Service, the Taylor Grazing Act payments, the Bankhead-Jones payments, the refuge revenue sharing payments, and the 5 percent proceeds from the sale of land and materials payments of the BLM. The table below reveals that these sources constitute a fairly significant total, and that they have the potential for increasing as more resources become developed.

Each of these payments is somewhat different. PILT is paid according to a formula based on the acreage of federal land in the county and its population, with some federal payments deducted from that amount. Funds for PILT must be appropriated in the federal budget every year, however, and over the last few years counties have not received their full formula payments, which are made directly to counties at the end of each federal fiscal year. In 1982, Congress authorized the payment through a continuing resolution because of disagreement about the proper level of funding.

Mineral leasing payments are paid to states with the understanding that the money is to be used for areas adversely affected by development of federally leased minerals. The payments equal 50 percent of the royalties and leasing fees in that state.

The 25 percent fund of the Forest Service was created by the 1908 National Forest Revenues Act to support schools and roads in the counties that contain National Forest land. It represents 25 percent of gross Forest Service revenues. The money is paid to the state, but Montana law gives two-thirds of it to counties for the construction and maintenance of roads. The law prescribes that the rest be used for statewide support of public schools.

The Taylor Grazing Act provides payments to states in two ways. Under Section 3, 12.5 percent of the receipts from grazing leases in Taylor Grazing Districts go to the state; and under Section 15, 50 percent of the grazing fees generated on BLM lands other than Taylor Grazing Districts go to the state. Montana then is restricted only in that the money must benefit the counties from which it was collected.

The Bankhead-Jones Farm Tenant Act allowed the federal government to purchase submarginal lands from private owners during the Great Depression. Now known as Land Utilization projects, the BLM now administers these lands in Montana. The BLM pays 25 percent of the net revenues from the land directly to ten counties in Montana to be spent on schools and roads.

Public Law 136 of 1951 requires the BLM to pay the state 5 percent of its proceeds from any sales of land and materials at the end of the fiscal year. Today these payments are much less than they were in past decades.

The National Refuge Revenue Sharing Act requires the Fish and Wildlife Service to pay 25 percent of its

Federal Payments to Montana State and Counties

	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981
Mineral Leasing Payments	$6,747,200	$7,261,566	$7,689,584	$9,547,850	$12,776,624
Taylor Grazing: Sec. 3	150,603	139,155	161,628	207,454	181,564
Taylor Grazing: Sec. 15	138,262	132,304	141,545	185,872	187,167
5% of proceeds from sale of land	5,039	11,438	14,653	7,681	8,465
25% fund of Forest Service (amount to state)	3,142,794	2,752,830	3,153,463	2,693,236	2,693,236
state subtotal	10,183,898	10,297,293	11,160,873	12,477,132	15,797,056
25% fund of Forest Service (amount to Counties)	6,285,586	5,505,662	6,306,927	5,056,552	5,386,473
Bankhead Jones	386,029	432,000	588,871	640,625	587,163
Fish and Wildlife Revenue Sharing	116,397	81,432	139,817	183,094	164,351
PILT	8,831,031	6,455,133	10,794,869	8,078,067	7,698,377
county subtotal	15,619,043	12,474,227	17,830,484	13,958,337	13,836,364
Grand total	**25,802,941**	**22,771,520**	**28,991,357**	**26,435,469**	**29,633,420**

Sources: Bureau of Land Management, Forest Service and Fish and Wildlife Service.

net revenues from refuge lands to counties in which they are located.

Over the last few years, these federal lands payments have come under attack in the Congress and by the Government Accounting Office. One GAO report criticized the PILT payments as duplicating other payment programs. It claimed state data used in determining PILT allowed states too much discretion in determining the amount that could filter down to the counties from other sources. GAO proposed that a single payment be made to counties on a tax equivalency basis. It then assumed a $.28/acre taxable value for all federal lands in Montana, based on an average of statewide property taxes, and determined that the current federal payments greatly exceed taxable value. In addition, it argued that the Forest Service and the BLM often compensate counties for police and fire protection through contract, so that these services should be considered already paid for. Finally, it argued that mineral royalty payments were unfair in that the state got 50 percent of a federal royalty, and then could still tax the leaseholder as if revenues came from strictly private sources.

Western states took exception to the GAO arguments, since federal payments to the states and their political subdivisions represent a significant source of income. A report by the Advisory Commission on Intergovernmental Relations came to this conclusion in 1978, but refused to recommend changes. It later said the problem of tax-exempt buildings and other real federal property was more serious, concluding that federal payments should be made to local governments that provide municipal services to these facilities. The counties may be in some difficulty if current trends continue, however. The payments made directly to counties are shrinking while those made to the state are increasing. Except for the 25 percent fund, there is no real mechanism to require the state to pass down payments. The GAO estimates only 40 percent of the funds reaches the counties. The National Association of Counties favors the creation of a permanent fund out of which each county can receive its full payment under the formula prescribed by PILT, essentially making it an entitlement payment.

Some problems still exist in the way the federal government compensates governments for its tax-exempt property. PILT should be maintained at some level for those counties that include federal lands not classified as national forests, or land utilization projects. On the other hand, a single statewide tax equivalency-based payment would create a great burden on the political process and tax assessors, and would not compensate those areas with special needs created by federal policy.

Access to Policy

Montana and its political subdivisions routinely engage in agreements with federal agencies in order to avoid duplication and inconsistency in managing the state's environment. Coordination of these efforts is an extremely important function of government if a high quality environment is the goal, but this coordinating process is often not noticed. As an example of the level of activity that goes on in this effort, the BLM has been a party to 23 cooperative agreements with Montana and its political subdivisions since 1977. The Forest Service has 39 in effect, one dating back to 1959. These agreements or "memoranda of understanding" range in importance from deciding whose responsibility it is to feed forest fire fighters when they work on state land, to creating interagency committees responsible for major natural resource policies. Although these agreements do not have the statutory force of law, they can be considered equivalent to contracts between individuals.

Few special efforts to administer the environment can be made without federal money, so one way state government can keep up on what federal agencies are doing is to monitor requests for federal financial assistance. The Circular A-95 process had allowed designated state agencies a chance to comment on these requests. It was instituted in 1968 under the Intergovernmental Cooperation Act; in 1973 federal land use plans and impact statements were also circulated to the designated agencies. In July 1982, the rules governing the A-95 program were rescinded by the Reagan administration in its efforts to reduce regulatory red tape. The state has replaced it with an intergovernmental review clearinghouse, which will perform many of the same functions.

Another way of monitoring federal actions that effect the environment is through vigilant reading of the **Federal Register**, since all proposed and final changes in federal regulations must be printed there. After proposed regulations are published, state and local governments, private organizations and individuals may comment on them before they become final.

Finally, all major federal actions significantly affecting the quality of the human environment are subjected to the federal environmental impact statement process. That process includes a review and comment period, in which the state can argue its position on the action. When the action does occur in the state, the comments made by the state may carry a good deal of weight. Also, increasing number of EISs are being undertaken as joint efforts between state, local and federal agencies, allowing even more Montana input into the study.

In intergovernmental relations between Montana and the federal government, the Montana Code

Annotated states it is the governor "who...is the sole official organ of communication between the government of this state and the government of any other state or of the United States." More often than not, a governor has to take the initiative in these discussions.

In addition to these general channels for intergovernmental communications, Montana has an immediate opportunity to influence the long-range management practices of the Forest Service and the BLM. Both are developing land use plans, and they are required to seek input from state, tribal and local governments.

The Forest Service is required by the 1974 Forest and Rangeland Renewable Resources Planning Act (RPA) and the amendatory 1976 National Forest Management Act (NFMA) to create long-range plans at the forest, regional and national levels. It is at the individual national forest level that the state and local governments can best influence the process.

The law requires that the Forest Service conform to existing state and local land use plans. Although the state currently has no statewide plans, this requirement is a good reason for local governments to develop plans for their areas. State involvement in the planning process comes as public comment, but meetings between state and federal officials are also common earlier in the planning procedure. The Forest Service seems to be expending a great deal of effort to solicit state input, but the real test lies in the extent to which it will respond favorably to it.

In general, the first three national forest plans in Montana have disappointed state officials. The first was the simplest, while at the same time retained the greatest level of specificity. Subsequent plans appear to have become more complex, less site specific, and less readable. This criticism has been raised by Montana officials, and they hope the situation is improving.

The BLM is embarking on a process very similar to that of the Forest Service. Resource planning areas are replacing grazing allotment areas as the review mandated by the Supreme Court is being expanded to consider all resource management, not just grazing. Like RPA and NFMA, the FLPMA requires extensive public involvement in land management decisions. The BLM plans being decided now will have a significant effect for a long time.

The current state administration has established a mechanism by which all comments of Forest Service and BLM plans by the state's executive branch of government will be sent under a gubernatorial signature. It is hoped that this will promote greater respect for state comments, and that Montana agencies will speak with one voice when negotiating with the federal government.

Now is the time for Montana and its citizens to influence federal land management decisions, if the resource planning process is to have the effect envisioned for it by Congress. It will be easier for Montanans to deal with the BLM and Forest Service by getting their wishes incorporated into preliminary plans than by having to seek variances in established plans in the future.

Montana is served by national and regional organizations that try to promote coordination among local, state and federal governments. Some of the most important of these to Montana in the natural resource area are the Western Interstate Energy Board, the Missouri River Basin Commission, the Pacific Northwest River Basins Commission, and the Mountain Plains Federal Regional Council. Of a more political nature are the Western Governors' Policy Office, the National Conference of State Legislatures, the League of Cities and Towns, the Council of State Governments, and the National Association of Counties. WESTPO has addressed itself to federal natural resource and energy policies more specifically than these other organizations, and especially studying the states' ability to take part in formulating those policies. Recently, WESTPO and the WINB have expressed a great deal of concern over changes in coal leasing. There are people in all of these organizations who are trying to make Montana's voice heard, even though they may be at odds with each other on occasion.

In conclusion, Montana is not as removed from the federal government as is popularly perceived. Problems remain in these relations, but the answers lie not in isolating ourselves from the federal government, but in improving, increasing, and using the potential lines of communication by which Montana can present its interests.

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MONTANA/CANADA RELATIONS

Montana's environment is sometimes susceptible to impact from developments arising outside of the state's borders. Pipelines, which transport oil and natural gas across the state, and resource developments, which pollute air and water crossing Montana's borders, are examples. Projects originating within a foreign jurisdiction, namely Canada, pose special problems for Montana. Two in particular—the Poplar River coal-fired generators in Saskatchewan and the Cabin Creek coal mine in British Columbia—are important concerns. This section examines the Poplar River and Cabin Creek issues for lessons Montana might apply to future problems.

Boundary Water Conflicts

Water issues historically have been the most important transboundary concerns for Montana, and water is at the center of the two recent disputes between Montana and Canada. The Poplar River and Cabin Creek issues grew out of long-standing agreements over waters crossing the international border, but they extend to a wider range of present environmental concerns over resource development. They illustrate the need to develop better mechanisms for handling other projects in the future.

For both Poplar River and Cabin Creek, the first action taken by concerned Montanans was to seek recourse from the International Joint Commission. The IJC was created in 1909 by the Boundary Waters Treaty between the United States and Canada to help resolve transboundary environmental problems. Because of its fairly impressive history in dealing with the pollution of the Great Lakes, there was high expectation that the IJC would satisfy Montana's claims in these contemporary cases affecting the western border between the United States and Canada. These hopes proved to be overly optimistic; the commission's actions on the Poplar River and the likely outcome of the Cabin Creek issue illustrate the limitations of the IJC. The Montana participants in both cases may have been disappointed because they misunderstood the scope and authority of the IJC.

The Boundary Waters Treaty came about because of the central role of water at the international boundary. Water constitutes a significant part of the boundary in the east, and many rivers cross and recross the 49th Parallel in the west. The treaty affirms the right of the upstream nation to use all of the waters that

arise within its borders—the so-called "Harmon Doctrine"—but it reaffirms existing downstream rights because both Canada and the U.S. are downstream users in several cases. A pragmatic doctrine of "co-riparian cooperation" has evolved. The treaty also modifies the right to divert, impound or use water through the following language: "Waters flowing across the boundary shall not be polluted on either side to the injury of health or property of the other." The commission may find itself in the position, therefore, of equitably apportioning waters at the border and concurrently determining how much downstream pollution may result from a project diverting part of a river flow. The IJC has done so successfully in the past.

In fact, however, the IJC has no authority to unilaterally enforce the Boundary Waters Treaty. Its actual powers are quite limited; it works more as an arbiter than a tribunal. The IJC has six members, three appointed by each country. The potential for deadlock on a decision is evident. But this has not often been a stumbling block because the IJC has reached many consensual decisions. The real problem involves the relationship among the IJC and the two nations; the IJC cannot act unless it receives a request (called a reference) from both nations, and its rulings have no power unless both nations agree to abide by its findings. The IJC seems to work best when both sides have an interest in abating pollution of a shared watershed, as is often the case in the Great Lakes. Along the 49th Parallel in the west, however, this situation is the exception rather than the rule. Usually one nation is the upstream beneficiary while the other nation is the downstream victim.

Poplar River Project

Saskatchewan decided in the early 1970s to meet an expected shortage of electricity in the province by building a coal-fired power plant at a remote site just a few miles north of the U.S. border. The power plant and its associated strip mine and dam on the Poplar River invoked a storm of protest from Montana. The provincial and national governments engaged in prolonged negotiations before turning to the International Joint Commission for settlement of the issue. The furor over Poplar River is subsiding, but many observers are convinced that this example set a poor precedent for dealing with future projects near the international border.

There were misconceptions born of ignorance and naivete on both sides. Montanans suffered from both an acute lack of accurate information about the project and a fundamental misunderstanding of the process Canada uses to approve such a project. Montana officials also had an inflated notion of the ability of the U.S. to veto or modify the project. Saskatchewan officials blundered into a hornet's nest they never expected to find on the sparsely populated Montana prairie. They did not anticipate the reaction to the project's impacts, nor did they expect to see the Canadian or U.S. governments so involved in a decision they felt belonged to Saskatchewan.

The tenacity of opponents in Montana elevated the Poplar River Project to an international issue far out of proportion to the potential impacts of the project. Only the presence of the international border can help to explain the black-and-white debate that emerged over the issue.

The Poplar River Basin covers 3,329 square miles, two-thirds of which is in the United States. Its 1970 population of 8,000 persons was divided in about the same proportion. On the Saskatchewan side the two largest towns are Rockglen and Coronach, with a combined population of 850 at that time. The towns of Scobey and Poplar in Montana accounted for 2,900 residents. Most of the remainder lived on farms or in smaller towns. The Fort Peck Indian Reservation covers the southern quarter of the basin.

The Poplar River is formed from three main tributaries flowing more or less to the southeast. The Middle Fork of the Poplar, with a mean annual flow of 12,900 acre-feet, is the largest fork at the international border. The East Fork contributes a mean annual flow of 11,500 acre-feet and the West Fork adds 3,580 acre-feet at the international border. All originate in Canada, converging in Montana near Scobey. The Poplar River joins the Missouri River in Montana near the town of Poplar. At its confluence with the Missouri River, the Poplar River has a mean annual flow of 92,560 acre-feet. This is low flow by "river" standards, and this small prairie stream varies greatly by season and by year.

Consumptive uses of the Poplar River in 1975 accounted for 10,250 acre-feet. Irrigation, all on the American side, accounts for two-thirds of this amount. An additional 10 percent is attributed to evaporation from stockponds. The rest is used for domestic consumption, but because of unpredictable flows, Coronach and Scobey use wells for their municipal needs. No water is dedicated to industrial purposes. The river has a fair reputation as a warm-water fishery in Montana.

The area's economy depends almost exclusively on agriculture. Cattle and dryland spring and durum wheat are the largest commodities, but some winter wheat, barley, alfalfa, oats and hay are harvested from irrigated soils. A few Scobey farmers and leaders of the Fort Peck Indian Reservation have discussed plans to expand irrigation in the basin. There have been no results from discussions of developing potash reserves in the area.

Prior to the Poplar River project, the water quality in the basin was considered generally marginal, with short periods of critically high mineral concentrations common. The water quality usually is adequate during the irrigation season, but significant increases in certain pollutants can make the water dangerous to some crops.

Air quality in the basin is typical for the northern prairie. The air is generally of pristine quality (except perhaps during the fallowing and harvest seasons), even though the area received only a Class II air designation under the U.S. system. Medicine Lake National Wildlife Refuge, which lies 56 miles southeast of the plant site, received Class I status because of its designation as a wilderness area under U.S. law.

The international border, which runs twelve miles north of Scobey, may have little direct ecological significance, but it meant a great deal in determining the way a project such as Poplar River could be undertaken.

Project Description

The Saskatchewan Power Corporation decided in 1971 that it could use reserves of lignite coal near Coronach to supply a power plant. In March 1972, the SPC applied to the provincial government for an appropriation from the East Poplar River for condensation and cooling water. In July, Saskatchewan agreed to reserve 6,000 acre-feet per year for an initial period of five years.

In November of 1972, SPC engaged consulting engineers to study the feasibility of developing a coal-fired power plant near its established coal reserves. The first of a series of studies was completed in March 1973. The original plans called for the following:

- a 1,200-MW coal-fired power plant, composed of four phased 300-MW units located six miles south of Coronach, at a cost of $126 million;
- cooling and circulation water to be supplied from a dam to be constructed on the East Poplar River. The power plant would be on the west bank of the reservoir (subsequently named Cooksen Reservoir), approximately one mile upstream from the dam (subsequently named Morrison Dam). The dam would be about 2.5 miles north of the Montana border; a lignite strip mine six miles northwest of the plant site to supply fuel. Coal for one 300-MW unit would require disturbing 160-320 acres per year. Coal reserves covered 21,000 acres; only one-half of this amount would be needed over the 30-year life of the facility;
- overburden depths at the mine would average 85 ft.; the coal seam would average 10 ft. The expected coal yield would be 13,000 tons per acre;
- coal would be hauled by trucks to the plant site, where it would be crushed and stockpiled;
- the coal in the ground was expected to be 35-40 percent water by weight. Wells would have to be drilled into the coal seam aquifer and water pumped out at the rate of 2,000-3,000 U.S. gallons per minute. This water would be discharged into Girard Creek, which flows into Cooksen Reservoir;
- the dry weight coal would have a heating capability of 7,220- 8,960 Btu/pound, but at the minemouth the undried coal would be only 6,000 Btu/pound. The dry coal would average 25 percent ash and .8 percent sulfur by weight;
- Cooksen Reservoir would initially flood 960 acres and store 14,000 acre-feet of water. The 1,200-MW plant would require 11,000 acre-feet per year in natural and induced evaporation, not including cooling and circulation water. The amount would be equal to the mean annual flow of the East Poplar River at the international boundary;
- development of the third and fourth 300-MW units would require an interbasin transfer of water from the South Saskatchewan River or another source. The reservoir would require construction of two new bridges and relocation of one road;
- diverted but unevaporated water would be returned to the reservoir through a series of canals and lagoons. Each 300-MW unit would require 136,000 U.S. gallons of water to transport bottom ash to an ash lagoon, where the ash would be precipitated and the water recycled. Water returned to Cooksen Reservoir would be no warmer than 80 degrees Fahrenheit;
- air pollution control would consist of dust precipitators rated at 96 percent collection efficiency, but the system would not include gas conditioning or coal additives. One 500-foot smokestack would serve two 300-MW units;
- precipitated fly ash and bottom ash would be buried in natural depressions or worked-out areas of the mine; and
- a 230-KV transmission line would connect the plant to Coronach, where electricity would be dispersed through an existing power line.

Major Concerns

Water quantity. Downstream users, mostly in Montana, were afraid that their present and future uses (irrigation, domestic consumption and recreation) would be threatened by this new demand. Users of existing wells also feared aquifer disruption or dewatering from mine operations.

Water quality. Natural evaporation from Cooksen Reservoir would increase downstream concentrations of boron, total dissolved solids and other undesirable compounds. Mine dewatering, stockpile runoff and mine runoff would increase levels of heavy metals in the surface water. Seepage from the ash lagoons could also pollute the groundwaters of the area (which flow across the U.S. border).

Air quality. Mine operations, coal hauling and burning at the plant contribute greatly to dust and other particulates in the air, which also generally flows toward the U.S. Untreated oxides of sulfur and nitrogen would be released through the smokestack; both of these can damage human health and crops and other property. The mine's lignite is also fairly radioactive; the Poplar River Project would emit greater than average amounts of uranium and strontium into the atmosphere.

Fish and wildlife. The East Poplar River has been a good warmwater fishery for walleye and northern pike in Montana, but flows in Canada have been too low and sporadic for these fish even without withdrawals for the project. The consumption of water by the power plant would decrease flows entering Montana, and construction of a dam upstream would also eliminate the annual high flows that maintain the channel regime and flush out accumulated sediment. The fishery would be damaged over a 9 to 10 mile stretch of the river below the dam, but total habitat in the region would be increased by the reservoir.

Socioeconomic. The loss of crops from polluted air and irrigation water was the major economic concern of the people in Montana, although some also worried about human health hazards from pollution of the air and municipal water supplies. The lost revenues to area farmers would probably have repercussions on the social organization of the area.

On September 4, 1974, the SPC formally announced its plans for developing the power station. It applied for approval for the first 300-MW unit from the Saskatchewan Department of the Environment under a new procedure for the province. The Minister of the Environment appointed a Board of Inquiry, which held three days of public hearings on the project in November. No Montana testimony was received at these hearings. An "information exchange" about the project occurred between Montana and Saskatchewan on December 30, 1974. In January 1975, Montana Governor Thomas Judge wrote the U.S. State Department about the Poplar River Project, stating environmental concerns in Montana and requesting IJC involvement. That was the first notification the State Department had of the project, and it was the beginning of international negotiations.

Role of the IJC

To Montanans, the Poplar River issue seemed a classic case for the International Joint Commission. The IJC had been involved in the Poplar River as far back as 1936. Recent actions had also given indication that the IJC could expand its jurisdiction to cover air quality and other issues raised over a development primarily affecting water. The Poplar River issue proved to be an extremely controversial one, especially given the relatively small magnitude of the project.

The IJC has been an important actor in the Poplar River drama from the outset. In 1936, the Montana Water Conservation Board applied to the IJC for approval of a dam for irrigation on the East Fork of the Poplar River that would have slightly raised the water level at the international border. The IJC gave its approval contingent upon the payment of damages to affected landowners. The dam was never built, but the IJC retained jurisdiction over the area until resolution of the project.

This intervention is an illustration of the IJC's original role. The IJC has an adjudicatory role only if the issue would materially affect the level of flow of boundary waters or interfere with the ordinary use of water for domestic or sanitary purposes. This role had been restricted to projects that actually backed water over the boundary. The Saskatchewan power plant proposal introduced entirely different terms.

In 1948, the IJC had been asked to study water requirements, existing and potential uses, apportionment and conservation of waters crossing the eastern border of the Milk River drainage basin in the west to the Red River of the North drainage basin in the east. The commission established the International Souris-Red Rivers Engineering Board to carry out the technical aspects of this reference. When the Poplar River Project was announced, this board still existed and the IJC assumed an investigative role in the project on the basis of the 1948 reference.

In 1966, the IJC received the Detroit River-St. Clair River reference, which requested transboundary air pollution studies for areas along the international

border. It created the International Air Pollution Advisory Board and subsequently used it to study air pollution impacts of the Poplar River Project in 1975. Thus, since references under Article IX of the Boundary Waters Treaty had been expanded to allow investigation of border problems beyond water apportionment, there was precedent for the IJC to consider water quality.

Both countries have agreed it is technologically impossible to prevent all pollution of transboundary waters. Those claiming injury from pollution can seek recourse in two ways: they may sue for damages in the upstream country, or they can request a non-binding advisory opinion from the IJC. If they sue, they are granted all the legal entitlements of a citizen of the upstream country, but they also assume the burden of proof in connecting the pollution to a demonstrable injury. The 1966 Helsinki Rules on the Uses of Waters of International Rivers defines international water pollution as "detrimental change" in quality that could cause "substantial injury" in another state's territory. Under the U.S. State Department's interpretation of these rules, this makes compensation for damages unlikely in cases where the water in question is already in a degraded state, or where stream flows are intermittent or insubstantial. This problem faced Montana officials in the Poplar River case.

Timetable

In February 1975, the Board of Inquiry gave its report to the Department of the Environment, which indicated its intent to apply for a national government license to construct the dam, as required by the International River Improvements Act. This would be the only permit required from the national government for the Poplar River project.

On April 29, 1975, the Canadian government conditionally approved a five-year license for Morrison Dam. Construction began immediately. The International Air Pollution Advisory Board of the IJC recommended better particulate control be used in the power plant. In negotiations held shortly thereafter in which Montana officials played a part, a memorandum of agreement was reached in which Saskatchewan agreed to control 99 percent of the particulate, but refused to use sulfur scrubbers.

In January 1976, the Poplar River Task Force of the International Souris-Red Rivers Engineering Board recommended a 50-50 interim apportionment of waters and a formal water quality reference to the IJC. One month later, the U.S. State Department proposed a water quality reference to Canada and requested that dam construction be suspended. In April, construction of the plant began.

Not until August 2, 1977, did the State Department and Canada's Department of External Affairs agree to wording for a Poplar River water quality reference. The reference included consideration of a 600-MW generating facility. A short time later, the International Poplar River Water Quality Board was formed to make a technical report to the IJC. Near the end of 1977, the SPC requested permission to construct a second 300-MW facility at the Poplar River site and the Department of the Environment created the Poplar River-Nipawin Board of Inquiry.

In March 1978, the U.S. State Department issued a strongly worded diplomatic note to the Department of External Affairs. It expressed consternation over Saskatchewan's consideration of a second unit before the IJC had released its formal recommendations on the first. A Canadian response stated that it would not delay a decision on the second unit, but assured the U.S. that no new construction would begin until IJC reports were received. The State Department stated it was not satisfied with this answer. On May 16, 1978, the IJC issued its report on water apportionment, advocating the interim apportionment of the East Poplar River recommended by the Poplar River Task Force, but advising against any final agreement until its water quality recommendations could be made.

In February 1979, an interim IJC report noted problems in the project's ash lagoon system that prompted changes in its design. The lagoons would now be lined with a clay membrane and ash recirculation water would be reused in a closed system, instead of being flushed back into Cooksen Reservoir. This system would be experimental.

The International Poplar River Water Quality Board's report was released in July 1979. The report recommended certain water quality objectives to be met at monitoring stations at the border. It also recommended continued surveillance of groundwater and endorsed the change in ash lagoon design, but generally found that the Poplar River Project would not create significant downstream water pollution. Hearings on this report were held in the middle of October in Scobey and Coronach. Much of the testimony focused on total dissolved solids and boron water quality objectives, which many Montanans considered lax.

On November 11, 1979, the Department of the Environment approved construction of the second unit. The Saskatchewan Department of the Environment closed Cooksen Reservoir to fishing at the end of December because the walleye there showed high concentrations of mercury.

The beginning of 1980 saw the creation of the Poplar River Bilateral Monitoring Committee. It consisted of one representative each from Montana, the U.S., Canada and Saskatchewan, with two ex-officio members from local governments, one from each side

of the border. The U. S. Environmental Protection Agency released a draft environmental impact statement on the Poplar River Project in July 1980. It was criticized by all parties involved in the negotiations.

In January 1981, the IJC issued its final report on the Poplar River Water Quality Reference. It cited accomplishments including monitoring, greater particulate control, lining of the ash lagoons and creation of water quality objectives. It encouraged permanent acceptance of water apportionments recommended by the Poplar River Task Force and the creation of a permanent claims commission by which SPC could be forced to pay damages for downstream pollution. The IJC expressed exasperation with this particular reference because of the lack of prior notice, consultation and good background data.

The Environmental Protection Agency's final EIS came out in June 1981, containing substantial revisions. While granting that improvements had been made, residents of the Scobey area were still dissatisfied with its conclusions. The Three Corners Boundary Association tried to convince the EPA to start over with its impact statement process.

The first 300-MW unit of the Poplar River Project was commissioned in June 1981, and commercial operation began the following month.

The Poplar River Bilateral Monitoring Committee issued its first annual report in March 1982. While maintaining that no serious transboundary problems existed, this document noted that the first unit had been shut down 27 times in its first six months of operation, that there had been 17 accidental spills of ash lagoon and recirculation water, that unusually high increases in TDS and other contaminants had appeared in a few groundwater monitoring stations, and that the unit had produced a very opaque smoke plume. The unit's boiler had been a major source of problems, as the coal apparently required the injection of diesel fuel to burn. SPC had also fallen far behind on its construction schedule for the second unit.

Analysis

Governments in Canada and the U.S. now consider the issue resolved, since the strip mine, reservoir and generating facilities already exist, even though the water apportionment treaty has not yet been consummated. SPC has assured the U.S. that no more units will be built at the Poplar River site.

Several lessons about the IJC are clear from the Poplar River case. What appears to be a prominent "court of last resort" is actually a rather fragile body with four inherent weaknesses. First, the IJC has no jurisdiction until both sides agree to "refer" the dispute. Second, it may become deadlocked on a decision because of the equal number of commissioners from each country. Third, neither side is obligated to accept the decision of the IJC. Fourth, there are no clear precedents for adjudication. The IJC cannot resolve all transboundary problems; it can only study and mediate some of them.

An important problem with IJC process is having to decide what to refer to the IJC, and when in a project's development to make the referral. The IJC was clearly hinting from the outset at the need for a water quality reference on the Poplar River Project; but it did not receive one until Morrison Dam had been constructed. As a result, the project was an existing use of water in the International Poplar River Water Quality Study under the 1966 Helsinki Rules.

The IJC's rules of procedure call for prior notice and consultation between countries for projects such as Poplar River. Canada and the United States have different opinions about information they have a responsibility to share, and the IJC has no means to enforce its own definition. Prior notice can be construed as a voluntary effort, rather than a formal requirement to communicate.

The IJC was meant to be a technical fact-finding committee, yet its work has major political overtones. Governments have difficulty deciding whether they should expect political negotiation or scientific debate from the IJC.

There were also serious limitations on the quality of technical information for the Poplar River project. First, baseline data concerning water quality on the American side were insufficient, since monitoring began in earnest only after construction of Morrison Dam had begun. Research on the effects on crops of increased boron concentrations in irrigation water was inconclusive. The ability to predict environmental impacts from such projects as Poplar River was in constant dispute. Experts contradicted each other on such things as the long-term environmental costs of low levels of sulfur dioxide, or the level at which salts in irrigation water actually damage crops.

A related problem with basing environmental decisions on purely technical criteria is in assigning economic values to environmental qualities. Even the foreseeable impacts do not lend themselves well to assigning monetary values. While current prices for crops may be known, prices in the future cannot be. The monetary value of human health is often measured in terms of medical costs, but avoiding costs are obviously only a part of the value of health. It is simply impossible to quantify all the costs and benefits of a project to determine its net effect. Ultimately, some qualitative value judgment has to be made, even though some decision makers might want to avoid this on highly volatile issues.

Measuring environmental damages and assigning economic values within strict scientific and ecological parameters can be very difficult, but it may seem easy

compared to the task given the IJC. This tribunal was put in the impossible position of trying to weigh only those damages that occurred on one side of an ecologically artificial international border, and to do so under a political microscope.

A question of equity arises in such cases where nearly all of the benefits of the project go to one jurisdiction while the vast majority of the costs are borne by another. The problem is more difficult when it's an international dispute because there is no appeal to a higher authority. Also, the only historical bases for determining "fairness" at the international level involve force. Transboundary pollution problems provide a real dilemma; they don't seem important enough to declare war, but they're too costly to ignore.

The substantive issues in complicated water apportionment problems between Canada and the U.S. have been unresolved for so long that there is not much hope for finding acceptable, equitable solutions. The U.S. and Canada have been using each other's water for decades. With limited historical monitoring, we may never know for certain who has had the advantage in using the other country's water. Neither side is likely to accept all the blame.

What seems fair to Canadian and U.S. citizens as a whole may not seem fair to the people of Saskatchewan and Montana. States are forbidden by Article I of the U.S. Constitution to carry out international negotiations. Consequently, local concerns can lose out to the national interest. The only U.S. perspective that counts on the Montana-Saskatchewan border may be the one developed in Washington, D.C. The State Department did not necessarily share all of Montana's concerns in negotiations with Saskatchewan over the Poplar River Project. When a local issue becomes the subject of international negotiations, concern can arise that local problems might not be given the respect they deserve. They may even be used as a tradeoff for something that is more important on a national scale.

The people of Montana and Saskatchewan presume that because the United States and Canada are so much alike, the organization of their governments must also be similar. In Montana, international negotiations seemed a viable way to prevent Saskatchewan from building the Poplar River project. That understanding was both incomplete and inaccurate. The provinces of Canada retain much greater freedom to develop their natural resources and economy than do the states under the U.S. Government. The federal government in Canada, therefore, has a more difficult time imposing its will on its subunits than the U.S. does on its states. The Canadian national government served more as a formal intermediary in negotiations with Saskatchewan than as an appeals court for Montana. Montana was at a greater disadvantage in international negotiating than it realized.

Conclusions

If experience is the best teacher, the Poplar River project yields some valuable lessons. Inexperience in Canadian relations and a certain measure of naivete characterized the Montana officials who pressed the issue. It is important that when a similar situation arises, Montanans realize the limitations of what they can accomplish and the points at which they have the best chance to influence the outcome. A greater commitment should be made to promote continuous relations with neighboring Canadian governments. Some form of liaison should be maintained even as governments change, instead of contacting each other only when problems arise. Information should be traded on a regular basis to fill the need for "prior notice and consultation" at the planning level.

Canadians, as evidenced by their laws and regulations, have not developed as strong a general commitment to environmental protection as is found in the U.S. Saskatchewan air pollution standards are being regularly violated at the one Poplar River unit that is operating. Also, SPC was required to employ the "best practicable technology," rather than the "best available technology" required in the United States. Still, the Poplar River project is more palatable to Montana than it would have been if SPC had not been compelled to change its original plans. Given the international constraints, Poplar River negotiations must be considered a success and some credit should go to the Montana contingent. State and federal officials believe that to demand any further concessions for Montana's environmental protection might reopen the conflict over additional projects on the Saskatchewan side of the border.

Montanans did not find the kind of access into Canadian decision making that they had come to expect from their domestic governments. The most successful channels for Montana negotiators were those that directly involved Saskatchewan officials. Talks at the U.S.- Canadian level were generally unproductive. National governments concerned with the issue of prestige seemed to be unwilling to compromise. Direct discussions between Montana and Saskatchewan officials, who knew what residents of their areas considered important, produced concessions. Face-to-face talks revealed that neither side was as unreasonable as the other had expected.

This Poplar River issue is often criticized for the lack of citizen participation and the absence of public information on negotiating progress. The Saskatchewan government did not favor public involvement in the Poplar River project, feeling that total public disclosure of highly technical information offered too much opportunity for distortion. But both Coronach and Scobey residents did force revelation of informa-

tion that helped produce a useful dialogue on the merits of the case.

The IJC proceedings were a very important safety valve for the partisan feelings on both sides. It was a place to "let off steam" and the legitimacy of the IJC assured local residents that prestigious officials actually were listening. The IJC was also valuable to government officials by reducing some of the public pressure on them, although it could be argued that final disposition of the project could have been more satisfactory if the public had applied more pressure in this direction.

Publicity on the issue tended to portray a polarization of views; Montanans were seen as being totally opposed to any development in that part of Canada, while the SPC was characterized as coveting this project at any cost. At times, to be sure, the negotiations did break down into a simple case of "us" versus "them." The disputes sometimes became highly personalized and lost sight of the more important questions of what was best for the parties involved.

Even today, there is vociferous opposition to the Poplar River project by some environmental groups in Montana. These groups were seen by Saskatchewan officials as a harmful factor in the negotiations. But their influence in the proceedings was limited mainly to reminding U.S. officials of the importance of the issue to area residents. Some observers speculate that this type of militancy could adversely affect Saskatchewan's approach to future projects. Such advocacy groups are bound to be involved in future projects, and they too should learn from this example what they can reasonably expect to accomplish.

Because Montana accepted some environmental degradation from the Poplar River project, there may be an inclination to respond in kind. However, Montanans should avoid excluding outside parties at the planning stages of any of their future projects, in effect making projects with international implications non-negotiable. And the redress of grievances should not extend to repayment in kind, trading pollution for pollution. If Montanans take this arrogant approach, the cycle will escalate and every side will lose. The only way we can expect international cooperation in these cases is through setting a good example by inviting our Canadian neighbors to participate in planning Montana projects that affect them, and committing ourselves to addressing their concerns.

A logical —but probably the least practical— approach to improve Montana's negotiating position lies in changing the international bargaining system. Granting greater powers to the IJC, allowing Montana to negotiate for itself and forcing greater public disclosure of international information are possible options. Such ideas are always perceived as a threat to national sovereignty, however, which is the source of power for every country's government.

In the final analysis, Montana is the victim of its location more than of the Poplar River project. Montanans live in a border state. Even though we think of Canada as a friendly partner, we must never forget that its actions are beyond our control. If Montana wishes to deal adequately with this fact, it has to understand Canada's political processes and the procedures for international diplomacy.

Cabin Creek Mine

In the early seventies, most concern in Montana over the impacts of coal mining focused on the southeastern corner of the state. One important exception arose in the northwestern corner: a dissimilar kind of coal, a different mining technique and a mine proposed in another country. These were the characteristics of the proposed Cabin Creek mine in southeastern British Columbia, and Montanans quickly became concerned about the potential spillover of adverse impacts from this massive Canadian project.

The prospective Cabin Creek mine would straddle two tributaries of the North Fork of the Flathead River just six miles north of the Canada-U.S. border, at a point where the North Fork becomes the western boundary of Glacier National Park. Water quality, endangered species, air quality, fish habitat and secondary development in a wilderness-quality area headed a list of international concerns and sparked a dialogue that has already lasted a decade. The mine may never open, in part because of the interest that has been elevated by that dialogue. If the mine does open and U.S. environmental concerns remain unanswered, the issue could be raised before the International Joint Commission.

Project Timetable

Sage Creek Coal Limited was created in 1968 as a joint venture between Rio Algon Limited (a subsidiary of Rio Tinto Zinc, a British mining conglomerate) and Pan Ocean Oil Limited (a subsidiary of Marathon Oil, since sold to Aberford Oil of Calgary, a Canadian company). Sage Creek Coal Limited explored coal possibilities on 24,652 acres in the East Kootenai region of Southeastern British Columbia under 51 leases on provincial Crown Land. Engineering and economic studies identified the Cabin Creek site as a likely prospect for the recovery of metallurgical-grade coal for sale in Japan and in other Asian markets.

and several Interior agencies, as well as the state of Montana. As a consequence of the consultations, B.C. agreed to promulgate a detailed licensing plan for the Cabin Creek project and to furnish Montana with the documents submitted at each stage by the company.

Sage Creek Coal Limited applied for and received approval of its Stage I proposal (preliminary environmental assessment in 1976). The Stage II application (approval in principle) was contemplated in 1978, but it was suspended, in part as a result of soft market conditions and in part because of strong reaction by the B.C. Ministry of the Environment against the company's proposal to relocate Howell Creek.

In 1978 the EPA began a five-year study, the Flathead River Basin Environmental Impact Study (FRBEIS), at the request of Senator Baucus to gather reliable baseline data to evaluate Montana's concerns. Information exchanges on the Cabin Creek proposal were made in 1979, 1980, 1981 and 1982 between FRBEIS and B.C. officials responsible for reviewing the mine.

Sage Creek Coal Limited submitted its Stage II application to the Coal Guidelines Steering Committee early in February 1982, and a copy was sent to Montana. A Montana interagency task force reviewed it and returned comments on the application in May. The Coal Guidelines Steering Committee announced in June that the Stage II application was incomplete and a decision on the project would be postponed by a month or two. Concerns over a proposed powerline to serve the mine site delayed the completion of the company's application. This information was supplied to the B.C. government in October. During the summer of 1982, Sage Creek Coal Limited sponsored tours of other operating mines in the region for area residents and Governor Ted Schwinden.

The B.C. government responded to Montana's comments on the proposed mine in September 1982. Montana's interagency task force forwarded its follow-up response in December 1982.

B.C. ministries have apparently completed their recommendations to the Coal Guidelines Steering Committee but B.C. government officials are uncertain when a decision will be announced. B.C. Premier Bill Bennett visited Governor Schwinden in Helena in August 1983 to assure him that Montana's input remains welcome.

The September 1974 issue of *Montana Outdoors* first raised public concern over the mine's potential impacts. Led by U.S. Representative Max Baucus, Montana officials in 1975 urged the U.S. State Department to express concern to Canadian officials. Mounting concern also led to the creation in 1975 of the Flathead Coalition, composed of area groups representing environmental, wilderness and sporting groups, chambers of commerce and the League of Women Voters.

Consultations on Cabin Creek were held in the late winter of 1976 between Canada's Department of External Affairs and a U.S. interagency task force organized by the State Department that included the Environmental Protection Agency, the Forest Service

Project Description

The following are the main elements of the mine plan described in the 1982 Stage II proposal:

- total recoverable coal in two hills is estimated at 152 million tons;
- the deposits contain medium volatile, clean, thermal coal with an average Btu value of 12,000, 16 percent ash content, 8 percent moisture content and .5 percent sulfur content;
- open-pit mining would extract 2.4 million tons annually over a mine life of 21 years;
- the two hills to be mined straddle Cabin Creek, and Howell Creek runs along the east edge of the north hill;
- the excavations would each be approximately a mile across and 1,000 feet deep;
- the mine complex would include waste rock dumps, a processing and cleaning facility, load-out facilities and a coal dryer;
- approximately 281 million cubic meters of waste rock would be displaced over the life of the mine;
- containment and settling ponds are designed to prevent direct run-off into Cabin Creek and Howell Creek, although B.C. standards allow for sediment discharges of 50 mg/liter from pond decants;
- electrical power (15 MW) would be delivered via a 230-KV powerline running the length of the Flathead Valley from the north;
- coal would be hauled by 59-ton trucks to a spur of the Canadian National Railway at Morrissey, 80 km northwest in the Elk River drainage;
- the haul road would be widened and paved to accommodate trucks 24 hours per day, 365 days a year, with a truck passing any given point every 7 minutes;
- there would be permanent employment of 530, including 455 mine workers, working in 21 shifts per week 355 days per year;
- a mine-site construction camp would house a minimum crew of 400 for site preparation with some estimates of up to 1,500 workers when road buildings and powerline construction are included;
- the permanent work force would be expected to be housed in Fernie, approximate population 5,000, located 48 miles north of the mine;
- 2,087 acres of land would be disturbed over the life of the mine.

The Coal Guidelines Steering Committee could stipulate changes in the mine plan if it gives approval in principle. The plan already has undergone modifications since Stage I approval was given in 1976.

The annual production projections have been scaled down, partly in reaction to a weaker coal market. Because of a re-evaluation of the coal's quality and a shift in worldwide demand, the coal is now targeted primarily for thermal markets, rather than metallurgical. Initially the company planned to generate electricity at the mine site and envisaged the construction of a "new town" to house the work force at the mine site. The original plan also called for the relocation of Howell Creek.

Major Concerns

Environmental Impact Concerns

The principal environmental concerns raised by the Cabin Creek proposal include: water quality (chemical leaching, sedimentation, phosphorus and nitrogen loading); air quality (fugitive coal dust, emissions from coal dryer); fish and wildlife (trout habitat loss, threatened and endangered species); and socioeconomic (pressures arising from settlement, recreation and regional development).

Water Quality

Downstream water quality has been the most prominent and persistent of the specific concerns. The Flathead water system is the key to the area's recreational attractiveness, which underpins the long-term health of the local economy. Initially, there were fears that mining activity would result in heavy metals leaching into groundwater and contaminating surface drainages if containment systems failed. Even small concentrations of some of these metals could be toxic to humans and animals. Although questions remain about acid leaching within limited areas of the coal seam, these concerns seem to have been adequately addressed. The major unresolved question involves the large volume of sediment that could be released into the river system with direct impacts on fish and small organisms. Increased release of nutrients could also accelerate the eutrophication of Flathead Lake.

Risk assessment is at the center of the ongoing debate. The mining company asserts that it will take all reasonable precautions for water containment. But B.C.'s mine standards are considered by Montana critics to be far less stringent than Montana's, and damage may result even from a conforming mine.

Air Quality

Montana officials feel the review of air quality impacts has been insufficient. Emissions from the proposed coal-fired coal dryer, designed to burn 60,000 tons of coal per year, are one concern. Fugitive coal dust from blasting, processing and transporting coal is also a problem. Using computer simulation, Montana predicted that the mine would violate Class I standards in Glacier National Park for particulates and SO_2. Emissions would probably also impair visibility in the Park and could be a volatile issue.

Fisheries

The North Fork tributaries are an important spawning area for game fish in the region. Montana officials estimate that 10 percent of the bull trout in the entire Flathead system spawn in Howell Creek within 3 km of the mine site. Originally the mine plan called for diverting Howell Creek but this was unacceptable to B.C. environmental officials. Under the revised plan, this important spawning area may still be threatened by disruption of groundwater flows, sedimentation, and increased metals and nutrients.

Wildlife Habitat

Wildlife habitat would be displaced directly by the mine and its facilities. An even greater area would be disturbed by more frequent human activity, and the diverse species that inhabit the region could be affected. Many of these live within Glacier Park and need the buffer zone that the Cabin Creek project might destroy. Threatened and endangered species, such as the grizzly bear and wolf, dramatize the wildlife habitat argument. Research conducted by the B.C. Ministry of the Environment indicates that this area may have the highest density of grizzly bears on the continent.

Socioeconomic Impacts

The mine evaluation gave only brief attention to the socioeconomic component, due primarily to the absence of any established or planned communities near the mine site. The work force and the increase in number of associated residents and visitors would, however, exacerbate the impact on wildlife habitat and further degrade the wilderness quality of the area. One issue is the increase in recreational pressure resulting from the improved access out of the valley, both north to Fernie and south to Polebridge, just across the Montana border. Another issue is the potential for random settlement, or squatting, on the Montana side by mine personnel not choosing to commute from Fernie.

The company argues that the town of Fernie has the capacity to comfortably absorb the worker population. Fernie residents supposedly welcome the mine because a decline in other local mining activity has reduced the area's economic growth. A few of the workers might choose to commute from the Montana side of the border during the summer; the money they

would spend in Flathead Valley communities might help offset their impact.

Regional Development

Socioeconomic issues help reveal the underlying reason for the high level of apprehension over Cabin Creek. Cabin Creek could be the first of five mines in the B.C. portion of the Flathead Drainage. Some observers believe more mines would become "necessary" in order to justify the high cost of opening Cabin Creek. Cabin Creek could be the impetus to regional development, the real fear of area residents. This is why the specific impacts of this mine—air and water quality, fisheries and wildlife—assume such importance.

Southeast British Columbia already produces 15 million tons of coal per year from five mines. The changing coal market plays havoc with the fortunes of each mine, and the current soft market raises questions over the propriety of opening up still another mine, especially one so distant from existing mines and settlements. Because the provincial government helps municipalities to provide for socioeconomic costs by allocating mine royalty revenues from the region, the revenue any one mine produces is shared by all communities. There is concern whether or not the region can support widely dispersed mine development. There is sentiment among some community leaders for an orderly provincial plan for southeast regional coal development.

Roles and Actors

Cabin Creek ranks as one of the longest running plays on the Montana environmental stage. Nearly a decade has passed since the warning carried in *Montana Outdoors* crystallized public opinion. Opposition in 1974 was strident, vocal and widespread, even while little was known for certain about the mine proposal. The Flathead Coalition was convinced from the start that even the best possible design could not ensure against a catastrophic accident polluting the North Fork. Mine opponents initially sought a legal or political remedy, perhaps an injunction or some symbolic assertion of American muscle.

There was a moralistic tone in the Cabin Creek opposition, in part because virtually all of the benefits of the mine would go to Canada, while most of the risks would be taken by Montana. Additionally, the coal was not destined to help resolve an American (or Canadian) environmental dilemma or energy crisis; Cabin Creek coal was targeted instead for a Japanese metallurgical market. Finally, the mine was viewed as simply a search for profits by a multinational conglomerate oblivious to the rights and concerns of downstream people. The Montana position seemed unambiguously correct, and Cabin Creek inspired Montana politicians to scramble for the high ground of leadership in the cause of protecting the Flathead.

But, over the years, the black-and-white has turned to shades of gray. Only a few of the principal actors in Montana today continue to view the issue in the stark moralistic terms of 1974. It gradually became clear instead that effective opposition would depend on a greater appreciation of the complexity of border relations and far more flexibility in bargaining. Information exchanges and proposals for joint monitoring have largely displaced confrontation and direct political pressure.

Modifications in Montana's approach to Cabin Creek seem to reflect lessons learned by officials about the political factors at work in the mine approval process. As goals changed and political targets shifted, bargaining tactics adjusted as well. The tendency to adapt was reinforced by incremental successes in influencing decisions and prompting adjustments to the mine plan.

Complexity of the Conflict

It is important to stress that there is not and never has been a single Montana position; Cabin Creek has invoked a spectrum of responses and prompted an array of strategies.

Threats to air and water quality standards set by the U.S. federal government raised national concerns. The Environmental Protection Agency and the State Department were drawn into the issue; the Park Service and the Forest Service were affected because of the potential impacts on their jurisdictions. Members of the Montana congressional delegation ensured that these agencies exercised their authority.

State agencies also were engaged, including the Department of Fish, Wildlife and Parks, the Department of Natural Resources and Conservation and the Department of Health and Environmental Sciences. Task force coordination was provided at first by the office of the lieutenant governor (Bill Christiansen and Ted Schwinden under Governor Tom Judge). The responsibility shifted to the governor's office under Ted Schwinden.

Local opposition sprang from a collection of environmental, conservation, sportsmen and civic groups. They initially banded together as the "Flathead Coalition" and struck a defiant pose against the mine. Without the early stridency of the local opposition, the case might never have been carried so long or so effectively at the state or federal levels.

FRBEIS Role

The Flathead River Basin Environmental Impact Study (FRBEIS) was responsible for the detailed review of the Cabin Creek mine proposal. The FRBEIS Steering Committee played the central role in communicating environmental concerns over the mine, in setting up information exchanges, and in engaging actions by responsible officials at the state and federal levels.

FRBEIS was established in 1978 under the sponsorship of Senator Max Baucus, and was largely a response to the Cabin Creek mine proposal. The study was designed to gather baseline data on the resources, ecological systems, and potential environmental degradation of the Flathead Basin, a region known for its wilderness values and recreational attractiveness. The near-pristine water quality of Flathead Lake and its tributary river system was recognized as crucial to maintaining a high quality of life and a healthy economy in the region.

Over its five-year course, the study spent $2.5 million, supplied mainly by the EPA, with financial and in-kind assistance from other federal and state agencies. Most of the funds were used to study aspects of the natural and human environment, including lake and river ecology, fisheries, wildlife, air quality, economics, and population. The research was conducted primarily by state agencies, university research units, and private consulting firms.

The FRBEIS Steering Committee had 15 members, including representatives from the Montana governor's office, local governments in the basin, the Confederated Salish and Kootenai Tribes, and the federal National Park Service, Forest Service, and EPA. There were two at-large citizen slots and one each for representatives of industry and the Flathead Coalition.

The findings of the Flathead River Basin Environmental Impact Study serve as a benchmark from which to judge the potential impacts of a variety of activities in the Flathead drainage. Most of these activities would occur on the Montana side of the border, including logging, mineral and energy development, recreational and second-home construction, and industrialization. But Cabin Creek is the most prominent single threat, and the study has given legitimacy to the opposition to the mine by documenting the workings of the Flathead Basin's natural systems and the potential for environmental damage posed by the mine.

Despite their strong concern over the mine proposals, the FRBEIS Steering Committee did not take a public advocacy stance relative to natural resource development in the basin. Instead, steering committee members believed the study's credibility and effectiveness depended on generating accurate, reliable, scientific information. This information could then be used by decision-makers as a basis for intelligent public policy.

As FRBEIS conducted its studies, information exchanges were set up between FRBEIS and B.C. agencies. FRBEIS coordinated the review of documents filed by the company with the agencies. The review was performed by the FRBEIS study consultants and state agency personnel, but all official correspondence took place between the governor's office and the premier's office. FRBEIS did not have an official political role, but it provided the information—and sometimes the pressure—for state and federal action. FRBEIS helped provide the scientific legitimacy, the resources and the interest needed to continue the discussion on Cabin Creek over the years.

Special Status

The Flathead Basin boasts a number of features which argue for special status for the regional environment. The preeminent claim is based on scenic, wildlife-rich Glacier National Park, which borders the North Fork of the Flathead River. Glacier Park is united with Waterton National Park in Alberta to form an International Peace Park. The two parks have also been designated as a World Biosphere Reserve under a United Nations program.

Conservationists have emphasized the need for a buffer zone to protect the integrity of these park lands. The U.S. Interior Department recently cited Glacier Park as the most threatened national park due to a variety of resource developments and proposals on surrounding lands. In British Columbia, intensive logging is underway along the tributaries of the North Fork. This area is adjacent to the western border of Waterton Park and the northern border of Glacier Park.

The upper Flathead drainage hosts three federally designated wilderness areas: the Bob Marshall, the Great Bear, and the Mission Mountains. The U.S. Congress has added the North, Middle, and South forks of the Flathead River and part of the mainstem Flathead River to the Wild and Scenic River System.

Recent land-use activities in the Flathead drainage, however, have affected the region's special environmental character. The Flathead Valley has experienced two decades of steady population growth, accompanied by increased development on both public and private lands. The cumulative impacts of timber harvest, oil and gas exploration, rural and suburban settlement and tourism are becoming evident in the basin. Would Cabin Creek impose a qualitative deterioration of a wilderness environment, or just constitute another quantitative increment in an inexorable process of change? Some British Columbia officials have expressed this latter interpretation and

suggest that agencies in the U.S. should consider their own policies, rather than focusing primarily on B.C.'s environmental standards.

Information Exchanges

The Montana strategy has adjusted to this argument. The state has downplayed the assertion that B.C.'s standards are flawed because Montana's are stricter. The official B.C. position has been that no mine would be approved that might threaten the B.C. environment, irrespective of international considerations.

Information exchanges have allowed the same point to be made more quietly at the administrative level. The data collected by FRBEIS have helped environmental officials in B.C. stress the need for more stringent emission, discharge and reclamation standards. Montana actors have recognized that their best strategy is to capitalize on the professionalism and sincerity of their Canadian counterparts and to help the B.C. officials and conservation groups to pressure their own elected officials.

Stage II Review

The Cabin Creek mine approval process seemed to reach a critical juncture in 1982 with the submittal by the company of the required Stage II mine plan for B.C. government approval. Outright rejection would probably mean the end of the company's aspirations in the region; approval in principle might pave the way to the mine's opening.

The Environment and Land Use Committee, which includes several ministries of the cabinet, makes the Stage II decision. The committee acts on the recommendation of a subcommittee composed of senior civil servants from the same ministries. This procedure was established after environmental groups complained that coal review seemed highly discretionary.

The Stage II review has been drawn out for a year. Part of the reason for the lengthy review is the extensive scrutiny of mine details by environmental specialists in B.C. and FRBEIS. Another reason could be the sensitive nature of the issue has made the government reluctant to decide one way or the other. Montana sent 115 pages of comments on the mine plan to B.C. in May of 1980. B.C. has acknowledged Montana's concerns, but it has not provided substantive responses to all of Montana's points because it regards some to be the proper subject of Stage III, its permitting stage.

The Cabin Creek mine sponsors are equally vexed by the delays and the prospect of further deferral by the government. Their invitations to Montana officials to visit the Cabin Creek site and other operating mines in the region are evidence of their eagerness to win Montana's approval. The company certainly does not feel that it is on an inside and fast track to rubber-stamp approval of the mine.

Montana officials have paid great attention to the mine plan at Stage II because of the analogy that has been drawn with the environmental impact statement (EIS) process in the U.S. There is concern that approval in principle at Stage II will create momentum for final approval at Stage III, even if mine design problems have not been or cannot be resolved. Poor coal markets might shelve the proposal for the immediate future, but many Montanans believe Stage II approval would allow a final "go ahead" at a later date.

The parallel drawn between Stage II and the EIS process, however, does not necessarily hold. The experience with the B.C. coal guidelines is too limited to conclude that Stage II approval is tantamount to final mine plan approval. The B.C. cabinet ministers have great discretion to reject, modify or impose new conditions on a mine even after Stage II approval is given. Election of a new government in the spring of 1983, for example, could have forced a complete re-evaluation of the mine plan; the entire coal guidelines could have been abrogated and the company forced to start anew, since no operating permits would have been granted. The mine sponsors would not have the same recourse to the courts as they would for a comparable project in the U.S. A significant time lapse in securing Stage III permits might likewise undo approval, even without a change in government.

Montana has pursued a dual strategy in pressing the issues at Stage II. One goal has been to kill the project by raising conditions that could make the mine economically infeasible. Failing this, the second goal has been to focus attention on environmentally questionable mine plan particulars that will need permit approval so that they cannot be overlooked in later monitoring.

The mine sponsors are caught in a dilemma. The project might be terminated if the company fails to receive approval at this time. The cabinet, for its part, is less likely to approve a controversial mine that has no assured market. On the other hand, the company might have a better chance of marketing the coal if they can demonstrate cabinet support of the project, through Stage II approval.

There is pressure on the government to encourage the mine plan at Stage II because the company has already spent more than $10 million on the project. A negative decision would expose the government to criticism that it is obstructing a project at a time when the provincial economy is in recession. But with equally good reasons to deny the mine, the

government may avoid any firm stand and grant a highly conditional approval in principal at Stage II, without committing itself to future political or financial support.

Canadian System

Cabin Creek provided some interesting lessons for Montana officials. Two major features of the Canadian political system operate differently than the American counterpart: confederal and parliamentary.

Confederal

Montana's initial assumption was that the government of Canada would be bound to honor the Boundary Waters Treaty. However, under Canada's version of federalism, the federal government's ability to enforce the treaty is limited. The confederal principle gives the provinces comparatively greater leverage against their federal government than the states have in the U.S. Control of natural resources in particular is a largely provincial decision. The Canadian federal government plays little role in matters of leasing, royalties or reclamation for natural resources such as coal. Federal government leverage, in the form of air and water pollution control standards, is also weaker than in the U.S.

Discussions held in the summer of 1982 with officials representing Canada's Ministry of the Environment left Montanans with the impression that the Canadian federal government could act as a counterweight to the B.C. government if the Cabin Creek mine application were approved under conditions unacceptable to Montanans. Remarks attributed to Environment Minister John Roberts encouraged mine opponents to see a potential ally in the federal government of Canada. Roberts appreciated the support given Canada's position on control of acid rain by the Montana congressional delegation, especially Senator Baucus, who has strongly supported transborder pollution control. Roberts met with Baucus and gave "assurances" that Montana's interests in the issue would be considered. He repeated these assurances in informal remarks at Glacier Park, and inferences were drawn that the Canadian federal government could and would force amendment of unacceptable portions of the mine plan or would veto the mine plan.

The legal disadvantage of the federal government in Canada is compounded by its present political and electoral weakness in the western provinces; any attempt to block Cabin Creek would be viewed as another of the "intolerable acts" that have spurred a separatist movement in the western provinces. The B.C. and Canadian governments are not likely to become openly divided over Cabin Creek, not withstanding the impression that federal and provincial governments routinely battle over resource issues. Further, the U.S. State Department would be reluctant to exacerbate this split by forcing an action. Short of the formal intervention of the IJC, there is little reason to expect intervention by the Canadian federal government.

Parliamentary

Montanans felt B.C. environmental regulations were seriously flawed by comparison with Montana's more stringent laws. The B.C. government relies upon guidelines rather than specific laws. There are no comparable substantive grounds for approval or disapproval of a mine plan.

The "government of the day" is legally sovereign under the parlimentary principle. It is not strictly bound either by past law or by treaty. Policy is not susceptible to judicial review as it is in the American check-and-balance system. The Canadian remedy is political, not judicial: the election of a new government.

Public participation in Canada is governed by the same principle. Montana is noted for its populist roots; its constitution of 1972 expanded and entrenched rights of public participation in meetings, hearings, and access to public records. The growing use of the environmental impact statement has enhanced this principle. In the parliamentary system, the provincial government can exercise its discretion on whether to hold hearings even on particularly controversial subjects.

Montana's Role

Montana's efforts have earned it a considerable role in the decision process and the working cooperation between Montana and B.C. officials has been remarkable. The promulgation of a detailed coal mine review process by B.C. has opened the door for organized Montana review. Agency information exchanges have served to clarify and press Montana's concerns. These have helped change the substantive mine plan to eliminate or mitigate some adverse impacts (e.g., decisions about Howell Creek relocation, mine-site electrical power generation, and a new town). The changes have been strongly endorsed by the B.C. Ministry of the Environment.

The protracted examination of the Cabin Creek proposal seems to have led to the partial

Americanization of the B.C. environmental review process. The Boundary Waters Treaty allowed the state to raise questions about toxic metals, acidification, phosphorus loading and loss of fisheries under the language of Article IV: "...waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other." But once the legitimacy of these claims was established, it became possible to raise environmental concerns on related aspects of the project: air quality, endangered species and socioeconomic impacts. Montana seems to have succeeded in using the boundary waters agreement to raise a long list of concerns normally found in an EIS in the U.S. Persistence seems to have put B.C. somewhat on the defensive, shifting the burden to B.C. to defend the project against the imposition of U.S. standards.

B.C. has been very cooperative even though it is under no obligation to do so. Montana has been allowed to participate almost as though it were a B.C. agency. This same status was not extended to Canadian citizens or the Canadian federal government. B.C. could have adopted Saskatchewan's position in the Poplar River Project that no Montana comment would be appropriate until the province had made its decision.

Recommendations

Almost all Montana parties have conceded that British Columbia has the right to approve the mine even if the mine plan fails to satisfy all of Montana's apprehensions. Montana Governor Ted Schwinden has been quoted as saying: "It is not Montana's place to tell B.C. how to develop its coal reserves." Nonetheless, his communications to B.C. have continued to stress that the province has an obligation to avoid damaging Montana's environment.

A recourse to political muscle in the face of a B.C. green light for Cabin Creek might be highly counterproductive. First, it might make no difference in the decision to open or operate the mine. Second, concerns about the mine's operation might prove groundless. Third, therefore, the positive contacts established in the current negotiations will be lost.

If Montanans are patient, the coal mine may die a natural economic death. Even with Stage II approval, the company may not be able to secure the necessary contracts or to develop the mine in the absence of subsidies from the government that are not likely to be forthcoming. B.C. officials privately admit that the current economy affords no prospective markets for Cabin Creek coal.

It seems to be far more sensible to continue with the quite successful process of working in good faith to make the mine plan as environmentally acceptable as it can possibly be and to minimize the problems of associated growth and development in the region.

Montana should also not abandon the game after helping to set the rules, because there will be other projects and other transborder environmental controversies. It is likely that B.C. will continue to accommodate Montana's concerns because, in so doing, the province avoids intervention by the Canadian federal government.

Cabin Creek is an issue remote to the immediate concerns of the B.C. government, just as the coal region is remote from the provincial capital in Victoria. It is true that the B.C. government does not share the view of Montanans that Cabin Creek is a major and serious international border issue. In part this is because the government has been coping with problems involving the Alaskan and Washington borders. The government also has not given Cabin Creek priority because it is preoccupied with economic concerns.

Part of Montana's frustration over Cabin Creek is traceable to the inertia built into the official chain of communication that includes the U.S. State Department and Canada's Department of External Affairs as intermediaries between Montana and the B.C. government. The official channels of communication are often redundant because of the limited jurisdiction of Canada's federal government and time-consuming because of the four-cornered relationship. Montana officials feel that they need to be able to deal directly with their provincial counterparts. Montanans also feel that the State Department views Cabin Creek as a low-priority problem. Once persuaded to pursue the matter, the State Department must formally work through External Affairs to influence the British Columbia government. External Affairs has little incentive to press the issue because of the poor state of general relations between the federal government and the western provinces. Both External Affairs and the State Department have more important issues to tackle, the feeling goes, and Montana's interest in Cabin Creek could be bargained away in a package of bilateral border issues.

It is fair to say that the Flathead River Basin Environmental Impact Statement helped the federal actors to see their duty more clearly. Left to its own initiative, the State Department might not have spent much time on this remote international border issue.

The FRBEIS ended in the summer of 1983, and the Montana Legislature established a Flathead Basin Commission to continue monitoring the regional environment. The Flathead Basin Commission will attempt to sustain FRBEIS-type activities on a modest scale. Some study components still require completion and others need periodic revision. Joint monitoring of the quality of the Flathead River at the international

border will also be required. Continued information exchanges with B.C. will be useful. But most important is the development of some sort of joint management region with the cooperation of B.C., recognizing the values of the region's ecosystem. B.C.'s willingness to consider Montana's concerns for fish and wildlife, air emissions, water discharges and reclamation suggest that common criteria for development could be agreed on. The creation of the Flathead Basin Commission will at least provide for ongoing dialogue in that direction and might help to defuse future border issues.

Present funding levels only allow the commission to exist; it still needs to raise the revenues for research and monitoring. Aside from its budget, there may be political liabilities associated with the Flathead Basin Commission. Its creation might refocus attention on the issue of basin development on the Montana side of the border.

There is another question beyond that of the value of a Flathead Basin Commission: What are the abilities of state government to deal with Canadian border issues and other events in Canada? The task force of state officials working under the FRBEIS umbrella gained immeasurable experience in the natural resource decision processes of one province in Canada. Despite federal government supremacy in the field of international relations, it was state officials who practiced the art of international environmental diplomacy.

One lesson is that the state needs to take the initiative and apply continuous pressure when Montana's environment is affected, even though it has no formal international authority. There will be similar border disputes in the future and Cabin Creek should not become just another ad hoc experience. The state needs to benefit from the lessons of Cabin Creek and Poplar River by developing an ongoing capacity to monitor Canadian events and issues. In 1981, the governor created an Ad Hoc Committee on Canadian Relations, composed of agency heads. This group needs to consider ways to accomplish this goal.

Conclusion

The Cabin Creek mine could one day open despite protest from Montana. The state might then attempt to utilize the International Joint Commission, but it is important to remember the limitations of the IJC, as reviewed earlier in this chapter.

The Cabin Creek case is not even comparable to the Poplar River issue. The federal government of Canada had leverage over the Poplar River project to bring in the IJC because the province had to comply with the International Rivers Improvement Act in order to build the storage system. No such permit is required for the proposed coal mine at Cabin Creek.

It is not likely that the issue could reach the IJC until and unless some physical evidence of actual damage is done, a point when it could be impossible to reverse the decision on the mine. Montana would have to convince the State Department to request a reference; the federal government of Canada would have to run roughshod over B.C. in order to do the same. It is not clear, therefore, whether resort to the IJC would be a sign of compromise or an admission of failure.

Success on an issue brought before the IJC depends partly on the publicity and the pressure that can be marshalled, but more on the good will of the governments involved, especially the government of jurisdiction. The Boundary Waters Treaty must be read primarily as a good-faith statement of cooperation between the two nations, not an iron-clad guarantee of protection against water pollution.

More than one observer has attempted to portray the Cabin Creek issue as a single dispute between upstream and downstream users. But the existence of the international border makes the problem far more complex and emotional. It is an extreme case of the polarization between economic development and environmental protection, since the region of benefit and the region of cost are in separate nations.

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TOURISM

Montana's rich outdoor recreation resource is one reason millions of travelers visit the state each year. Glacier and Yellowstone national parks are two major attractions for tourists, but the state's other extensive opportunities for land and water activities help bring in people who drive, hike, hunt and fish, or who just want to view a variety of scenery unmatched in the lower 48 states.

It's not surprising that by some measures, Montana's travel industry is the fourth largest industry in the state. In 1979, the last year state tourism was thoroughly studied, around 20,000 employees served nearly 3.5 million travelers; that accounted for the fourth largest employment group in the state, behind Trades and Services, Government and Agriculture. The travelers, both resident and non-resident, spent about $900 million in the state, generating over $170 million in personal income: the fourth largest generator. The state taxes these travelers paid amounted to more than $20 million, with most coming from the state tax on motor fuel.

These figures represent a poor tourism year when high prices for and uncertain supplies of gasoline reduced the number of visitors. Tourism has grown steadily since that year. The figures also cover the travel industry as a whole. Tourism, or travel for the purpose of pleasure, accounts for about 40 percent of the total, according to a study completed for the Montana Department of Highways.

Many of the travelers had no specific vacation destination within Montana; often they were passing through to another state. Those that did have a specific Montana destination concentrated in several areas. Five counties—Yellowstone, Gallatin, Flathead, Cascade and Missoula—received more than 50 percent of the money spent by travelers. The next fifteen counties gathered about 40 percent of the receipts, leaving only about 8 percent for the remaining 36 counties.

A variety of outdoor activities kept tourists entertained in Montana. A 1979 study, conducted by the Montana Bureau of Business and Economic Research, surveyed residents of the state and found that more than three-quarters devoted at least a portion of their leisure time to outdoor activities. The three most often mentioned were picnicking (77 percent), walking for pleasure (72 percent) and driving for pleasure (71

percent). These were followed by swimming (66 percent), fishing (59 percent), camping (57 percent), hiking and climbing (38 percent) and hunting (35 percent).

Although Montana attracted 3.5 million tourists in 1979, experts in travel promotion believe that Montana is just reaching a small percentage of potential visitors. According to a 1980 report by Davidson-Peterson Associates,"...the type of vacation experience offered by Montana is the type of experience many people want. There is demand for outdoors, nature-related vacations. There is also demand for relaxation, fishing, Old West history and atmosphere and sightseeing."

The consultants estimated that Montana travel promotion efforts have managed in the past to attract only 5 percent of the pleasure trips taken by residents of the prime U.S. market (the area within a reasonable automobile trip of Montana). Montana's penetration of the prime Canadian market was slightly better at 13 percent, but that was still considered to be low. The report concluded that the major reason more visitors didn't come to Montana was a lack of information about the state's vacation opportunities. A better travel promotion program, it said, could successfully tap a large pool of potential tourists.

In fiscal year 1980-1981, Montana ranked 46th in the nation for state spending on travel promotion. In the region only Idaho spent less, while the province of Alberta spent ten times as much. The 1983 Montana Legislature agreed to nearly double state spending for tourism advertising; the results of that effort probably won't become apparent until the 1984 summer season.

While tourists from all states and many foreign countries visit Montana and the other Old West states, more than two-thirds come from the Far West, Mountain West and Great Lake states, according to a study done for the Old West Regional Commission. Residents of Washington were the most common visitors to Montana, followed by those from California, Wyoming and Idaho. The study also showed that of the five Old West states (Montana, Nebraska, North and South Dakota and Wyoming), Montana was the most popular principal vacation destination.

Montana has a strong existing tourism industry which is an important part of its economy. The attractiveness to tourists is based on the outdoor resources that few states can match. As these types of outdoor recreation opportunities grow more scarce in the U.S., Montana will gain an additional advantage when it competes for tourists. For this relatively pollution-free, renewable industry, future developments look promising.

Resources

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Montana Bureau of Business and Economic Research, **Attitudes: Montana Outdoor Recreation Survey**, Missoula, 1980.

Montana Dept. of Fish, Wildlife and Parks, **1983 Montana Statewide Comprehensive Outdoor Recreation Plan**, Helena, 1983.

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SUBDIVISIONS

The division of land can be a critical indicator of human impact on the environment. As more land is used for human habitation, less is available to meet other human resource and ecosystem needs. Once land is divided into small parcels and put under intense human occupation, it is unlikely that it will ever be used again for agriculture, mining, timber or wildlife habitat. In this way the subdivisions many Montanans live in represent an irretrievable loss of a potentially renewable resource—the land.

Montana has been blessed with magnificent natural beauty. The state's economy and its citizens' mental and physical health benefit greatly from it. Yet, it is precisely that beauty that makes Montana particularly susceptible to the documented trend of people moving away from the urban environment and into the rural or "natural" one. Most of the time these people are escaping the congestion, crime or complication of urban living, but they don't want to give up the amenities it provides. Eventually, so many people move to the natural environment, it loses some of its beauty, the core of its economic base (the land as a renewable resource), the high quality of its air and water, and the ability of existing political organizations to provide fundamental services.

Subdivision Laws

These problems have not gone unnoticed. Montana has two statutes that are the predominant means for regulating subdivision activity: the Montana Subdivision and Platting Act and the Sanitation in Subdivisions Act. The Subdivision and Platting Act established the current survey and record-keeping requirements for land divisions, as well as regulating land development by allowing local review and approval of subdivisions. The Sanitation in Subdivisions Act requires the Montana Department of Health and Environmental Sciences (DHES) to review the water, sewer and solid waste facilities of subdivisions. If a subdivision meets established standards, the department issues a Certificate of Sanitary Restriction and construction can begin.

As initially passed, the Subdivision and Platting Act defined a subdivision as any division of land into two or more parcels, any of which contains ten acres or less. It exempted from review those divisions intended: for sale or gift to the owner's immediate family; for court-ordered splits; for mortgage purposes; and for strictly agricultural purposes. In

1974, an exemption for boundary adjustments and relocations was added. It also required review for any new condominiums, mobile home parks or recreational vehicle parks. All local government units were required to adopt subdivision regulations that met the minimum requirements set by the Department of Community Affairs (DCA). Funding for the review was to come from fees collected from the subdivision developers, who would also submit any environmental assessments required. The definition of a subdivision was later amended to include parcels up to 20 acres, and an exemption from review was added for an occasional sale, which allowed landowners to split off one parcel each year. Other important amendments to the Subdivision and Platting Act were the inclusion of "public interest" criteria for local government review and approval of an expedited review process for minor subdivisions (those with fewer than six lots). Most recently, the legislature added minimum required local subdivision regulations, which removed DCA from the subdivision review process and reflected an executive reorganization of that department.

The Sanitation in Subdivisions Act also has been amended since its passage to bring the definition of a subdivision within the two acts into uniformity. But family transfer, occasional sales and boundary relocation exemptions from Subdivision and Platting Act review are still subject to DHES review of sanitary facilities.

Abuse of the exemption clauses and the 20-acre exemption from comprehensive review has led to constant criticism of Montana subdivision laws. The difficulties in determining when land division should be subject to public scrutiny and when the benefits from public review outweigh its costs, not to mention the distribution of those costs, makes the proper role of government in subdivision review a controversial topic. In addition, our heritage gives us a political philosophy that links private property rights to our ability to be free. Many people feel that any weakening of the freedom to acquire, utilize and dispose of property rights is a direct attack on their liberty. Land division, its review and control are therefore complex and volatile political issues.

Evaluating the Problem

Attempts have been made to measure the amount of land that has been divided without public review since the subdivision review acts took effect. The Montana Environmental Information Center (MEIC), a nonprofit environmental research and advocacy organization, conducted subdivision inventory projects for several counties in 1975 and 1980. The MEIC researchers undertook the arduous process of visiting county courthouses and adding up the number of filings, lots created, and acreages divided, and comparing subdivision plats which undergo review with certificates of survey which are filed for divisions not requiring local review. They found that about 90 percent of land divided was not being reviewed and concluded that an alarming amount of environmental degradation was taking place. Critics of the MEIC inventories have charged that only the largest, most abuse-prone counties were inventoried and that the findings had been wrongfully transposed on the state as a whole. Others criticized the MEIC work because they felt it was done by people unknowledgeable about what they were doing.

Another attempt to quantify the level of unreviewed subdivision, and apparently the only government effort to do so, was the 1977 DCA report, *Land Division in Montana*. It essentially confirmed work done by the MEIC. While the two studies did not arrive at identical totals, the differences between them are within a reasonable margin for error and attributable to different time periods. *Land Division* has been criticized for using the same methodology as the MEIC used, but both are the foremost works in subdivision inventories in Montana, and their figures accepted as "in the ballpark." Some time has passed since the DCA study, so this EQC report will update its information using a different approach.

The partial analysis EQC prepared assumed that you can get a valid indication of the use of the family transfer and occasional sale exemptions comparing the total acreage reviewed by DHES for sanitary restrictions with the acreage reviewed by local governments as minor or major subdivisions. With the assistance of the DHES staff, EQC looked at the period between January 1, 1977 and December 31, 1981. To make our study more useful, we analyzed the data by county.

One problem with our study is that it contains no measure of the use of the 20-acre exclusion, mortgage release, or court-ordered exemptions. Our methodology may also count some divisions approved at the state level and later abandoned before being recorded, or not yet recorded (developers have two years to do so after DHES approval). It is also possible that some divisions may have been recorded improperly at the county level without DHES approval. It is possible that a minor inaccuracy was introduced into our study from a subdivision being redivided within the five-year period. The files were sometimes inconclusive as to whether a certificate of survey was filed under a family transfer or occasional sales exemption. For that reason, our study combined the two categories. A rough estimate based on the experience of the DHES staff and the trend of clearly identifiable parcels is that of these two exemptions,

about ⅓ of the lots and ¼ of the acreage filed under certificates of survey are attributable to the family transfer. Boundary adjustments and amended plats weren't included in our study, because they should not result in the creation of new divisions of land.

Advantages of our approach include the fact that only land that people will probably be able to occupy is counted. Some of the land recorded as divided in clerk and recorder offices around the state can't meet the DHES requirements for sanitary restriction removal. Also, the Subdivision Bureau must review remainder parcels under 20 acres, so these are also incorporated into our data.

Overall, it is impossible to have perfectly valid statistics on the rate of land division in Montana, because of the sheer number of reviewing agencies, discretionary interpretations of land divisions, the possible permutations of exemption filings, and other complications created by the laws. Nevertheless, some means for measurement is necessary to determine if land divisions allowed through the use of exemptions are a significant problem. This study may shed some light in that direction.

Our study found a correlation between subdivision activity and the general state of the economy. Land development in the state dramatically increased during 1977 and 1978, peaked in 1979, decreased sharply in 1980 and probably bottomed out in 1981 and 1982 at a level below what it was in 1977. It would also appear that as economic times get tougher, the family transfer and occasional sale exemptions make up a larger percentage of the land market.

A final conclusion drawn from this study is that subdivision activity in the state of Montana is an uneven problem. Only 19 counties contain over 1,000 acres divided in the last five years. Of these, eight had over 5,000 acres, and four over 10,000 acres. Over one-half of the subdivision activity occurred in Flathead, Missoula, Ravalli and Yellowstone counties. If Gallatin, Lewis and Clark, Cascade and Lake counties are added, the figure jumps to 75 percent, and the 20 most subdivided counties contain 93 percent of the acreage divided in the state. With the major exception of Yellowstone County, land division would also seem to be a regional phenomenon, with only five of the 20 most subdivided counties in the eastern portion of the state. The most intense subdivision activity occurs along a line running through Flathead, Lake, Missoula and Ravalli counties. The need for subdivision regulation may seem to vary geographically, but this may not be the case. In the east, subdivision activity, while not continual, can still explode with the boom-and-bust cycle of energy development. The need for regulation is still there.

A recent example is Richland County. This area experienced an economic boom from the development of oil and gas in the Williston Basin. Unfortunately, the local government was overwhelmed by the initial demand for land use planning and subdivision regulation. As a result, significant unregulated subdivision occurred before the towns of Sidney and Fairview were able to respond. Fairview has been informed that DHES will approve no more lots because its sewage treatment facility is overloaded. In Sidney, the county sanitarian informed DHES that six major subdivisions and several minor ones were being constructed without department approval.

In the western part of the state, subdivision problems are often the result of long-term development of the area. In time, the environmental costs have become economic costs, especially for future developers. An example of this twist of fate is the North Blaine Estates.

North Blaine Estates is a proposed subdivision in Flathead County consisting of 29 single-family unit lots, 14 of which would be situated on the north shore of Lake Blaine. Studies have indicated that the lake is becoming eutrophic, primarily because of nutrient loading from earlier development on the lake. The Water Quality Bureau of DHES recommended that little if any additional nitrogen pollution should be allowed in the lake. The Subdivision Bureau staff estimated that the sewage disposal system proposed by the developers would eventually allow 90 percent of the nitrogen in the sewage to find its way into Lake Blaine. The developers did not want to mitigate this impact, so the project was denied. Because the denial hinged on technical evidence that was subject to dispute, North Blaine Estates challenged the denial before the Board of Health and Environmental Sciences. The board ruled that the department was justified in its denial.

The future of North Blaine Estates will depend upon whether its developers feel they can afford the cost of upgrading its sewage treatment system. If they don't, it will be the first time a major subdivision is blocked solely because it lacks DHES approval. The developers continue to argue that they would not pollute the lake; they consider it unfair that they should be denied a permit while so many others are already living around and polluting the lake. Better planning might have forestalled this problem and proven less expensive. On the other hand, it is difficult to predict what would have happened had the land been divided through exemptions; it is probable that some additional pollution would have occurred.

Certain areas in the western part of the state are beginning to feel the long-term effects of poorly planned and unplanned development. Some of that reckless development occurred before the current subdivision laws were passed. Some of it continues today despite the laws.

Unfortunately, this report cannot examine how the 20-acre exclusion from the definition of a subdivision lot has been used to develop land. The only way to obtain empirical evidence on this is to visit the state's

Five-year Subdivision Activity

COUNTY	Major Subdivisions plats/lots/acres			Minor Subdivisions plats/lots/acres			Cert. of Survey #COS/lots/acres			County Totals filings/lots/acres		
MONTANA TOTAL	876	35154	37053.45	2486	6051	21826.26	6786	12296	65166.02	10148	53501	124045.73
Beaverhead	11	377	332.48	22	41	140.62	80	104	461.36	113	522	934.46
Big Horn	7	323	213.11	9	17	13.79	53	79	334.25	69	419	561.15
Blaine	2	38	98.89	8	16	75.72	21	29	187.66	31	83	362.27
Broadwater	11	499	603.45	12	43	98.02	46	71	336.82	69	613	1038.29
Carbon	22	379	679.90	76	152	566.54	108	149	1048.40	206	680	2294.84
Carter	0			1	1	.5	2	3	5.0	3	4	5.5
Cascade	30	1561	2495.67	124	201	895.61	220	395	2381.98	374	2157	5773.26
Chouteau	0			2	2	13.32	12	16	46.73	14	18	60.05
Custer	13	576	292.43	24	67	131.69	20	23	104.84	57	666	528.96
Daniels	1	11	2.79	4	10	6.10	2	2	8.40	7	23	17.29
Dawson	18	678	387.04	11	17	46.22	55	62	253.92	84	757	687.18
Deer Lodge	2	65	72.0	13	32	60.76	26	37	205.22	41	134	337.98
Fallon	3	17	14.27	3	14	7.98	4	6	23.09	10	37	45.34
Fergus	6	273	249.19	26	48	100.53	34	41	187.80	66	362	537.52
Flathead	114	3966	2779.40	246	796	2320.06	1637	3180	16681.6	1997	7942	21781.06
Gallatin	88	3355	4949.46	143	356	951.69	369	627	3398.39	600	4338	9299.54
Garfield	0			0			1	1	3.38	1	1	3.38
Glacier	5	33	43.73	19	38	163.33	18	21	79.57	42	92	286.63
Golden Valley												
Granite	3	26	10.23	9	13	35.26	27	34	125.42	39	73	170.91
Hill	22	557	294.40	36	77	340.75	55	66	227.82	113	700	862.97
Jefferson	11	493	737.45	41	66	394.95	107	153	813.14	159	712	1945.54
Judith Basin	0			0			4	5	14.20	4	5	14.20
Lake	24	894	1223.13	62	172	582.29	368	603	3217.56	454	1669	5022.98
Lewis & Clark	48	3250	1923.43	132	289	1134.00	363	628	3278.48	543	4167	6335.91
Liberty	0			1	1	1.0	4	4	14.75	5	5	15.75
Lincoln	17	538	468.49	74	222	647.89	266	484	2710.05	357	1244	3826.43
Madison	10	253	550.60	39	137	720.52	94	129	754.14	143	519	2025.26
McCone	1	20	66.80	4	8	24.77	10	11	42.24	15	39	133.81
Meagher	0			5	22	92.86	7	11	89.13	12	33	181.99
Mineral	4	80	126.49	10	34	116.96	48	67	331.91	62	181	575.36
Missoula	98	4583	7612.17	340	700	2737.20	746	1802	9092.43	1184	7085	19441.80
Musselshell	0			1	3	4.31	2	2	20.71	3	5	25.2
Park	10	173	418.78	57	109	478.23	144	216	1114.24	211	498	2011.25
Petroleum												
Phillips	11	500	321.89	8	26	39.74	18	22	151.09	37	548	512.72
Pondera	3	63	47.06	10	19	28.85	12	18	84.56	25	100	160.47
Powder River	9	449	554.97	5	6	22.90	3	3	5.04	17	458	582.91
Powell	5	278	308.89	11	19	83.85	32	43	139.20	48	340	531.94
Prairie	0			0			2	2	2.02	2	2	2.02
Ravalli	39	1034	2220.54	442	1312	5463.68	585	1158	6809.64	1066	3504	14493.86
Richland	38	1058	645.39	55	128	463.68	108	141	453.97	210	1327	1563.04
Roosevelt	6	258	99.81	8	12	44.33	15	18	141.61	29	288	285.75
Rosebud	21	2651	933.97	17	44	174.28	26	37	154.84	64	2732	1263.09
Sanders	12	211	295.54	29	102	348.94	163	235	1232.83	204	548	1877.31
Sheridan	8	155	51.53	14	34	23.33	17	19	43.04	39	208	117.90
Silver Bow	9	413	91.89	47	66	251.84	97	214	673.63	153	693	1017.36
Stillwater	14	319	355.14	33	73	323.53	72	122	730.26	119	514	1408.93
Sweet Grass	0			7	18	77.35	32	34	103.93	39	52	181.28
Teton	5	98	187.93	30	37	187.63	33	38	165.88	68	173	541.44
Toole	0			10	13	30.23	5	8	28.16	15	21	58.39
Treasure	0			1	1	14.89	2	2	8.01	3	3	22.90
Valley	4	137	109.53	22	31	119.94	21	30	84.56	47	198	314.03
Wheatland	1	1	4.07	2	2	10.72	2	2	5.74	5	5	20.53
Wibaux	0			0			1	1	2.15	1	1	2.15
Yellowstone	110	4511	4179.52	181	404	1213.08	587	1088	6551.23	878	6003	11943.83

county courthouses, but that is costly and time-consuming. Lack of this evidence is a serious problem. What little information on the use of the 20-acre split does exist indicates that the amount of land divided into 20-acre to 40-acre lots is probably equal to the amount of land divided by all other means. For example, the 12,000-acre Royal Teton Ranch in Park County was recently completely divided into 20 acres or larger lots. Such an example may not be typical, but it would seem to belie the initial justification offered for the 20-acre exemption—that the low demand for 20-acre homesites and the low level of density did not warrant local review.

But whether the review of these homesites is warranted is secondary to another problem. It is often not used for the creation of 20-acre homesites, but to facilitate the further division of very large parcels into much smaller lots. It would be almost impossible to divide the Royal Teton Ranch quickly using only family exemptions and occasional sales. By initially dividing the parcel into 20-acre lots, the developers can use other exemptions to further divide the land into four-acre and five-acre lots, which are more marketable. According to many planners across the state, it is this aspect of the 20-acre exclusion that is causing the most significant land use problem.

Leapfrog Development

The 20-acre definition not only facilitates an escape from review for large pieces of land, it also encourages inefficient land use. For example, the price of an unreviewed large homesite that is a significant distance from town may be comparable to a much smaller one that has been meticulously reviewed and developed according to local guidelines. In addition, potential buyers could be informed that they might begin construction earlier on the exempted lot because it needs no review, and that the larger lot could even pay for itself if the buyer wanted to use exemptions to further subdivide the parcel. The larger lot may seem to be a better buy than the smaller one. When large lots far from the municipal limits are inhabited in preference to smaller, more traditionally subdivided lots close to the city, a ring of open space results around the city or town. This phenomenon is known as "leapfrog development."

Exemptions are not the only economic incentives for leapfrog development. The current method of taxing property for agricultural use can also contribute to the division of lands into five to 40-acre parcels in areas sufficiently far from cities. Montana's Greenbelt Act allows agricultural land to be assessed, not at its market value, but at its value for agricultural production. The act was passed because of a belief that the agricultural community was bearing an unfair tax burden when speculation forced the assessed value of land to skyrocket. Some people felt it would help to preserve agricultural land, allow farmers and ranchers a better chance to make a living, and keep them from being forced to sell the land. The main problem with the law has been the difficulty of confining the special agricultural assessment to legitimate agricultural enterprises. A lot eligible for this property tax break must be either over five acres and used under one of three rather broad criteria for agricultural purposes, or provide at least 15 percent of the owner's gross annual income.

This leapfrog development amplifies the traditional impacts associated with suburban sprawl. Larger homesites mean larger quantities of agricultural land lost to second home sites and two-horse-and-a-cow hobby farms. This is especially true when the land speculation market is more profitable than agriculture, which is now often the case. To be fair, however, some small-lot buyers have proven that even relatively tiny farms can be extremely productive; not all subdivided land is lost to agricultural production.

Because the value of land as wildlife habitat is seldom reflected in its market value, this use can be lost when property is divided. As land develops in a leapfrog fashion, the once remote habitats become impacted. People living in rural subdivisions most often utilize septic tanks for their sewage disposal, and experts disagree about the possible long-term effects these can have on groundwater quality. While leapfrog development may diffuse the pollution entering the groundwater, it could increase the number of groundwater sources polluted. The energy costs associated with suburban sprawl in terms of travel and electrical transmission is even greater from leapfrog development than from traditional development. The same is true for the provision of government services. Even when the developers or homeowners in rural areas are willing to pay the increased cost of roads or fire protection, the services they receive could seem inadequate by urban standards. Without good planning and review, home buyers are more likely to have long-term problems. What might look like a desirable place to put a home may be located in a rock slide area, floodplain, or area of extreme fire danger. And more land is consumed for human residence at a higher long-run cost than would probably have occurred through denser, better planned development.

Solutions

As is often the case in environmental regulation, Montana law has been based on the myth that environmental degradation is caused by a few large and obvious abusers. In this case, the villains were believed to be big-time land developers and multi-unit subdivisions. The law has succeeded in making this kind of development better regulated. However, the environment is probably more affected by the thousands of landowners who, seeking only to make up for a poor crop or keep up with inflation, sold a few acres to a pleasant family that only wanted a nicer place to live, or more room for their kids. All of these perfectly legal land transfers, insignificant by themselves, are the major land use problem in Montana. Changes in existing laws could help alleviate this situation.

As of October 1981, 26 Montana counties had completed some kind of a countywide comprehensive plan, and ten more had partially completed plans. Eighty local planning boards exist in Montana, and 39 of them employ staff. This would seem to indicate that the planning process is slowly becoming an acceptable function of government. Of course, planning can only be successful if the desire and ability to follow it through exists. Various proposals for saving our land resource may offer some hope, especially such ideas as agricultural districting, conservation easements, tax incentives and purchase or transfer of development rights.

Planning and subdivision review can be expensive. As currently practiced, subdivision review is paid for by developers. It is argued that since developers initiate the process, they should be the ones to pay for it. Seen in a different way, however, the benefits of planning and subdivision review go to all of us, and we all help cause the problem. Suburban sprawl and leapfrog development aren't the result of simple greed and avarice on the part of land developers. They occur as the result of the desire of more and more Montanans for a piece of "God's country," and escape from urban problems and taxes.

What is clear to nearly everyone concerned is that the Subdivision and Platting Act and the Greenbelt Law are not working as they should to encourage orderly, planned and efficient development. The legislature grapples with this fact nearly every session, but has yet to arrive at a solution acceptable to the majority of legislators. Although a poor economy has slowed subdivision development, the problems identified in this section are still significant and need resolution. With the immediate pressure of development relatively low, perhaps now is the time to seek solutions.

Resources

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Montana Environmental Information Center, **Down to Earth**, Helena, February 1975 and November 1980.

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WASTE DISPOSAL

The Department of Health and Environmental Sciences (DHES) regulates management of municipal solid waste, hazardous waste, junk vehicles, radioactive waste and septic tank pumpings, with different rules and programs for each. This section describes the problems associated with each of these kinds of waste and the state's strategies for control.

Solid Waste

The solid waste generated in Montana increases with population growth. But as disposal of this garbage becomes more centralized, management problems change or even decrease. Since 1967, it has been state policy to phase out open-burning dumps, to consolidate waste into fewer sites, and to make these sites cleaner, safer and more aesthetically acceptable. In the past 13 years, over half of Montana's more than 500 dumps have been closed or upgraded to sanitary landfills. About 227 solid waste landfills are currently in operation in Montana, 165 of which have been licensed by the DHES.

While most of the state's solid waste is disposed of at sanitary landfills, owners of five or more acres of land may discard their refuse on their property as long as it poses no public health threat and creates no public nuisance. In addition, commercial incinerators burn a small amount of solid waste in Montana.

Many disposal sites are being phased out through the establishment of countywide container programs, in use in 21 counties. Large receptacles are placed around a county where residents can deliver their refuse. A collection service transfers the garbage to large sanitary landfills. Each countywide container program eliminates between five and ten disposal sites.

To become licensed by the DHES Solid Waste Management Bureau (SWMB), landfills must be operated according to certain state rules, patterned after guidelines of the Environmental Protection Agency (EPA). The bureau must ensure that the geology and hydrology of proposed sites are suitable for containing waste, as well as approving operation and maintenance plans. Waste at landfills must be covered with soil at the end of each operating day (local officials may decide hours and days of operation); blowing litter must be controlled; sites

must be fenced; most fires are prohibited (but permits can be obtained to burn wood waste); and leachate (contaminated moisture) must be prevented or contained. If landfill operators have difficulty meeting these standards, they may apply for variances from the rules.

The SWMB assists waste management system operators in complying with the rules and monitors all waste management systems. Although the inspectors frequently notice rule violations and receive complaints of blowing litter and fires from residents near landfills, violations are usually not considered serious enough to warrant fining the operators. Violators are generally notified of problems and urged to cooperate, although court injunctions have been used occasionally to force compliance. The bureau also strives to help unlicensed operators solve their compliance problems. A few local governments had challenged state standards for landfill maintenance because of the expense of compliance. But the large majority of government and public health officials and adjacent landowners, and the DHES and EPA were against any relaxation of these standards. They argued that less stringent rules would exacerbate problems of odors, flies, disease, bears, rodents, and air and groundwater pollution.

Easing sanitary landfill standards could also have had a secondary effect. Only six new disposal sites have been approved by DHES since the beginning of 1977. The major reason so few new sites have been created is landowner opposition to having "dumps" for neighbors. Looser rules could have made new landfill sites even more difficult to find.

A serious problem associated with solid waste disposal is the contamination of groundwater by landfill leachate. Landfills established prior to SWMB's 1969 review and licensing requirements are more likely to contaminate groundwater. Some of these landfills are located in drainage areas with permeable soils and shallow groundwater. The bureau has required about 15 of these landfills, including most larger sites, to monitor hydrologic conditions around the site. Monitoring requirements are determined for existing landfills on a case-by-case basis after inspection by the SWMB hydrogeologist and a consulting hydrologist. All new sites and site expansions may be required to install monitoring programs. If pollution in monitoring wells exceeds state standards, the landfill must be closed and capped with an impermeable material, and a system installed to mitigate contamination of groundwater.

While disposal sites and collection services may be owned privately or publicly, most Montana landfills are municipally owned. Montanans also have the option to form refuse disposal districts. Thirty-two districts have been created, 18 of which are countywide. The other 14 cover parts of counties. The county commissioners must approve the district, with the consent of district residents and in accordance with state law. The district may operate its own disposal service or hire one, and may own or lease a disposal site. Fees, usually $1 to $4 per family per month, are collected by the district, based on the amount of garbage generated.

The Solid Waste Management Bureau, in addition to managing the disposal of refuse, is required to "...conserve natural resources whenever possible." The bureau has had some success in this area. Controlled salvage operations are allowed, with local and state approval, on over half the landfill sites in the state. To encourage recycling of waste materials before they reach landfills, the bureau provides information to recycling businesses and often coordinates the sale of recyclable material.

The largest barrier to expanded recycling in Montana is the high cost of transporting recyclable goods to distant markets. The generally low cost of waste disposal and fluctuations in demand for commodities are further impediments to recycling in Montana. But as resources and energy become more expensive, recycling is expected to increase. In 1981, the Associated Recyclers of Montana surveyed the state's 52 commercial recycling centers. The 48 respondents reported that 9,732 tons of goods—aluminum, steel cans, bottles, newspaper and other paper—had been recycled that year. This represented less than 2 percent of the waste generated, but Montanans were paid $2.5 million for the items, which would have cost $292,000 to discard. The amount recycled after 1981 may be higher, since glass and cardboard recycling have greatly increased.

Unlike some states, Montana has no large-scale recycling of plastics, tin cans or many other recyclable commodities. Recycling of waste oil is encouraged by the bureau and by DNRC's Energy Division, however. In October 1982, the division published a brochure aimed at making the public aware that waste oil is valuable, but that it can threaten water supplies if improperly discarded. The best use for waste oil is to re-refine it for lubricating oil. Businesses across the state collect used oil, but since Montana has no oil re-refinery, waste oil is usually used for weed and dust control. The Energy Division believes a re-refinery may eventually become viable as a stronger market develops for used oil.

To encourage resource recovery and energy conservation, the DNRC Renewable Resource Program gave $300,000 to SWMB to help cities and counties plan resource recovery operations. The DNRC added $350,000 in 1981 to fund the design and implementation of resource recovery projects in some Montana cities; funded projects were for the incineration of solid waste to generate steam and electricity for commercial and industrial use. Studies for this type of facility have been completed or are underway in Livingston, Bozeman, Billings, Helena and Missoula. Over half of the state's garbage would be utilized if the refuse from just seven counties

(Flathead, Cascade, Lewis and Clark, Yellowstone, Gallatin, Missoula and Silver Bow) was incinerated in similar facilities. The bureau feels that more energy conversion facilities will be built in Montana during the 80s as technologies improve and landfill and energy costs rise.

Livingston, the first area to receive implementation funds, has the state's only operating waste-to-energy conversion facility, which began operating in April 1982. Burlington Northern has a 20-year contract to buy steam generated by the plant. A $3.1 million industrial revenue bond paid for construction of the plant. The loan should be repayed in 15 years and the plant should last 25 to 30 years. Operating and maintenance expenses are paid through a $12 per ton "tipping fee" paid by the garbage haulers. Unseparated waste is fed into the incinerator, which consumes about 78 percent. The remaining inert ash, about four truckloads per day, is delivered to the landfill. The volume of waste sent to the landfill has been reduced by 60 to 80 percent. The conversion facility's air pollution controls keep emissions to well within state standards.

Park County's waste and 60 percent of the garbage from Yellowstone National Park are burned at the plant. The facility can burn 72 tons of waste per day, but it is presently operating at about 54 tons per day; it receives even less waste when Yellowstone's summer season ends. Negotiations are underway to obtain waste from Bozeman and Big Timber. Without adequate amounts of refuse, the plant may operate as few as four days per week.

Western Montana College in Dillon has completed plans for a similar facility, and is considering initiating pre-design work. Billings is finalizing a proposal for pre-design and implementation of a waste-fired conversion facility; studies in Helena and Bozeman concluded that facilities in those cities may not be prudent at this time. Missoula's city council, having recently completed a preliminary study, is now deciding whether to pursue a grant for further study and pre-design.

Reducing the amount of waste generated is a good long-range method of safely managing waste while minimizing cost and maximizing resource and energy conservation. Source reduction decreases the volume of solid waste, reduces the need for resource extraction, demands less land for waste disposal, and requires less energy for the manufacture and disposal of goods.

Hazardous Waste

Hazardous waste is "...any waste or combination of wastes that poses a substantial danger, now or in the future, to human health or the environment and which therefore cannot be handled without special precautions." Hazardous waste, as presently defined by EPA and SWMB rules, includes substances that are flammable, highly reactive or toxic. Montana's 130 hazardous waste generators produced about 5,716 tons of hazardous waste in 1981.

Substances produced included toxaphene, PCB's (polychlorinated biphenyls), hydrofluoric acid and asbestos. Industries producing these included wood products, agriculture, chemicals, petroleum refining, primary metals (mining, smelting, refining), fabricated metals (plating and polishing), and electric utilities.

Toxic and hazardous wastes are more strictly regulated than solid waste. The state's Hazardous Waste Management Act (HWMA) follows EPA's mandate for implementing a hazardous waste program. Since Montana has followed EPA guidelines, EPA may soon fully authorize the program, pending rules to be adopted by the bureau concerning permitting procedures, technical specifications for facilities, and financial responsibilities applicable to facilities.

The SWMB temporarily permits twenty-four facilities to treat, store or dispose of their own hazardous waste; thirty companies have been assigned EPA identification numbers to allow them to transport hazardous waste. But Montana has no commercial facilities to treat, store or dispose of hazardous waste.

Almost 90 percent of the state's hazardous waste is presently disposed of within the state. Most large generators in Montana dispose of most of their waste on their premises. These on-site disposal facilities must meet the same stringent standards as would commercial facilities. However, any new hazardous waste disposal rules that would raise on-site costs may cause Montana generators to increase their off-site disposal. Increasing concern over long-term liability from hazardous waste may also encourage off-site disposal. But as requirements become more strict and disposal costs increase, more generators may be unable to afford proper disposal, on-site or off. Illicit dumping may then increase. Realizing this is a potential problem, the EPA and state officials are developing plans to help small businesses comply with the new regulations, and to ease direct financial burdens from the regulations.

Current regulations require that records on hazardous waste be maintained from its generation to disposal. This manifest system of cradle-to-grave tracking is handled by the generating, transporting, and disposal facilities. Each year, generators send the SWMB reports of all regulated hazardous wastes they produced in the state. These reports are compared with the records of disposal facilities to assure that all wastes were properly disposed. This process is difficult with 10 percent of Montana's hazardous wastes being disposed of in other states (chiefly Idaho and Oregon).

Another effort to improve the handling of hazardous waste is a new statewide "waste exchange" program, which informs potential customers of industrial by-products they might be able to use. Interest in the waste exchange program is currently being gauged by the Montana Chamber of Commerce under a contract with the SWMB.

The hazardous waste program operates on 75 percent federal and 25 percent state funds. The SWMB may also receive aid from the federal Superfund to help identify, report and clean abandoned hazardous waste sites. Any use of Superfund dollars for site cleanup will require a site-specific state match. The sites in Montana that may be eligible for Superfund support are Rocky Mountain Phosphate at Garrison, Anaconda reduction works in Anaconda, Anaconda refinery in Great Falls, Libby area groundwater, Milltown area groundwater, and Silver Bow Creek from Butte to Warm Springs.

Other Waste Problems

As a result of amendments to the federal 1980 Resource Conservation and Recovery Act (RCRA), mining wastes are exempt from the HWMA. Since Montana's law cannot be more restrictive than the federal law, the SWMB cannot require proper disposal of hazardous mine wastes. Although Montana does have mine reclamation laws, those policies do not directly address hazardous waste produced at processing sites located away from the mines. Water quality may be seriously threatened at those sites, but processing industries are not required to plan for the problem. Only documented violations of water quality standards can force processing plants to improve their handling of hazardous waste. By the time those violations have been proven, considerable damage may have already occurred.

The bureau must also address the problem of the disposal of certain pesticides and pesticide containers. Quantities of some of these regulated substances are too large to be deposited in sanitary land-fills. The SWMB offered to collect these materials from 1969 to 1978, but high costs and unsuccessful attempts to locate a pesticide disposal site in the state led to termination of the program. No accurate estimate exists of the annual generation of pesticide waste, as sources of contamination are too widely distributed across Montana. When the disposal program was offered, about ten tons per year of pesticide wastes were accepted by the bureau; volumes are estimated to be at least that high now. Discarded pesticide containers could number more than 350,000 per year, although only a small fraction of these would require special treatment.

A further problem, perhaps even more serious than those already mentioned, is the improper disposal of hazardous waste produced by numerous unregulated small-scale generators. Hazardous waste rules apply only to generators of at least 1,000 grams per month, or at least 1 kilogram per month of "acutely hazardous" waste. Hospitals, medical labs, schools and small businesses are among the generators usually exempt from full regulation. Since the state's law cannot be more strict than the federal law, small generators remain free to discard their unidentified waste at landfills, on private property, or down the drain. The SWMB has no idea how much hazardous waste these generators produce, and has no means to obtain that information. Small generators are not required to label their wastes or to maintain manifest documents, but the bureau would like to make specific requirements for small quantity generators and acceptors. Some landfills now refuse small quantity hazardous waste because of concerns over long-term liability. Unfortunately, stricter rules might mean higher costs, and illicit dumping by small generators could result.

Junk Vehicles

In an effort to rid the countryside of unsightly vehicle graveyards and to conserve iron, steel and energy, Montana initiated the Motor Vehicle Recycling and Disposal Program in 1973. The program has provided for collection and recycling of well over 70,000 tons of scrap motor vehicles.

County commissioners or their appointees (sheriff's department, sanitarian or a separate agency) administer the program. Each county has a vehicle graveyard and has organized a program to best suit its needs. County programs provide free collection of vehicles, but do not compete for vehicles with private wrecking facilities. At the start of the junk vehicle program only 120 wrecking facilities were licensed for operation in the state. Today there are 200. The existence of the county programs encourages private wreckers to offer the same free vehicle collection service to the public. The industry must aggressively seek out vehicles before the county does. Salvaging parts from vehicles stored in county graveyards is prohibited. This keeps the county from directly competing with the private used parts industry.

When county yards accumulate at least 200 vehicles, the wrecks are crushed and shipped to out-of-state scrap processors and steel mills for recycling.

All junked vehicles, county vehicle graveyards and private wrecking facilities must be screened from public roadways. Also, county vehicle graveyards and private wrecking facilities must be licensed by the

state. County and state officials are responsible for enforcing requirements of the license, yet keeping tabs on all yards is extremely difficult. No laws limit the number or size of yards.

The junk vehicle program is funded primarily by junk vehicle disposal fees, which are assessed when vehicles are registered. The program collects 50¢ from each motor vehicle license fee, $1.50 from each vehicle title transfer fee, and $50 for each wrecking facility license. The program also collects revenue derived from the sale of junked vehicles to recycling firms.

The program is quite successful. Besides aesthetic improvements, the program contributes to a quality environment in other ways. Substituting scrap iron for virgin materials in steelmaking results in an energy savings of 74 percent, a reduction of air pollution by 86 percent, and reductions in water pollution and mining wastes by 76 percent and 97 percent, respectively. What is more, the program generates enough revenue to be virtually self-sustaining.

Radioactive Waste

Little radioactive waste is currently being produced in Montana. No large quantities are generated, and low-level waste is produced in only small quantities by hospitals, research labs, the university system, and some geophysical surveyors.

Disposal of "large quantities" of radioactive waste is prohibited by law in Montana; disposal of low-level waste is allowed. In 1980, voters expanded the law that bans radioactive waste disposal by adopting Initiative 84, which included uranium mill tailings in the disposal ban. The 1981 legislature reacted to the ban by creating Referendum 89, which Montana voters ratified to eliminate I-84's ban on radioactive waste produced by the refining of uranium.

As a result of the Federal Low-Level Radioactive Waste Policy Act of 1980, disposal of low-level radioactive waste is the responsibility of the state. That act also authorizes states to enter into regional compacts for radioactive waste disposal. Montana is now officially in the Northwest Interstate Compact, which guarantees Montana a long-term depository for radioactive waste.

Some of these substances are currently disposed of in other ways. Montana State University in Bozeman deposits its waste in a university-owned site. When that site is full (expected in about five years), MSU's radioactive waste will be disposed of commercially. Some low-level wastes, mostly rapidly decaying and in liquid form, are rinsed down drains. The Occupational Health Bureau of DHES sees no problem with this practice, and it feels that low-level wastes presently pose no environmental or public health threat in Montana.

Pumpings

Careful disposal of septic tank pumpings is necessary to avoid polluting water supplies. Montana's 150 tank pumpers collect waste not only from septic tanks, but also from chemical toilets and oil sumps. Records are unavailable on amounts that pumpers collect and dump.

Pumpings are best disposed of in municipal sewer systems. The second best option is to spread pumpings onto suitable farmland. The least favorable option is to landfill the waste.

Pumpers must be licensed; the SWMB is currently working to modify the program's rules so that pumpers will be more closely monitored. To become licensed, dumpers will have to pre-arrange dumping areas. Local officials will then approve disposal of pumpings and inspect sites and operators to ensure compliance.

Resources

Henningson, Durham and Richardson, **State Solid Waste Management Study**, Helena, 1976.

League of Women Voters, **Hazardous Waste Exchange**, Washington, D.C., 1984.

Montana Dept. of Health and Environmental Sciences Solid Waste Management Bureau, **Hazardous Wastes in Montana**, Helena, 1977; **Motor Vehicle Recycling and Disposal Program**, 1981.

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Resource Conservation Committee, **Choices for Conservation**, July 1979.

EQC ACTIVITIES

MONTANA ENVIRONMENTAL POLICY ACT

The Montana Environmental Policy Act (MEPA), 75-1-101, et seq., MCA, was passed by the 41st Montana Legislature and became law in 1971. The purpose of the act is "...to declare a state policy which will encourage productive and enjoyable harmony between man and his environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man, to enrich the understanding of the ecological systems and natural resources important to the state, and to establish an environmental quality council." At 75-1-103, the act declares that it is "...the continuing policy of the state of Montana, in cooperation with the federal government and local governments and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can coexist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Montanans."

To fulfill these goals, MEPA requires that the state assess the impact that each proposed major state government action would have on the quality of the human environment by preparing a detailed statement that discusses:

— the adverse environmental effects that cannot be avoided should the proposal be implemented;
— alternatives to the proposed action;
— the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and
— the irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented.

While this policy mandate seems straightforward, uncertainty exists over the state's specific obligations under the act. This uncertainty surrounds one paramount question: "Does MEPA require or authorize the state to incorporate the broad environmental considerations discussed in MEPA when it decides to grant, deny, or condition the issuance of a permit or license?"

This question remains unanswered, although the Montana Supreme Court did partially respond to it in 1976 in *Montana Wilderness Association v. Board of*

Health and Environmental Sciences. That case concerned the removal of sanitary restrictions on the proposed Beaver Creek South Subdivision in Gallatin County. The jurisdiction of the department arose under the Sanitation in Subdivisions Act, which requires DHES to review proposed subdivision provisions for water supply, sewage disposal and solid waste disposal. The department prepared an environmental impact statement triggered by the proposed action of removing these sanitary restrictions. Thirty days after the issuance of the final environmental impact statement, the department issued a certificate removing the sanitary restrictions on the plat. Just prior to this, the Montana Wilderness Association sought to enjoin the department in district court, alleging that the department's environmental impact statement was inadequate and, as such, the department had failed to comply with MEPA. The district court compared the EIS with the requirements set out in MEPA, and found that the procedure adopted by the department had been wholly inadequate to meet the standards established in the statute.

The Montana Supreme Court heard the case on appeal and on July 22, 1976, it affirmed the district court's decision. The court held that the department was indeed required by MEPA to conduct a comprehensive review of the environmental consequences of its decision, and that the EIS prepared thereunder was *procedurally* inadequate due to an insufficient discussion and consideration of the full range of environmental factors required by MEPA. On December 30, 1976, however, the court issued a second opinion following a rehearing, and completely reversed its earlier decision. In the December opinion, the court held that the Sanitation in Subdivisions Act dictates that the department act only in accordance with those criteria specifically expressed in that act: sewage, solid waste and water supply. The court reasoned that MEPA could not expand the department's review of subdivisions beyond those specific criteria, since that would create a conflict with the legislative policy of local control as expressed in the Subdivision and Platting Act.

Although this ruling has invited strong criticism, it is currently the law on the matter and given this, it must be accepted that an agency's responsibilities under MEPA can be circumscribed by other statutes. At this time, however, it remains unclear whether the holding will be limited to those instances where a state versus local control question exists.

Regardless of the resolution of this issue, an examination of agency implementation of MEPA through compliance with the EIS requirement is appropriate. From the outset, there has been substantial variation among agencies in their approach to implementing MEPA. The first Environmental Quality Council, in October of 1971, issued a set of interim guidelines to help agencies prepare environmental impact statements. The subsequent internal procedures adopted by the various agencies ranged from extreme simplicity to comprehensive, carefully prepared outlines. Some agencies did not prepare any internal procedures. Additionally, there was a lackluster effort by agencies to comply with 69-6505, RCM, 1947, which required all agencies of the state to review their statutory authority, administrative regulations, and policies and procedures to identify inconsistencies and discrepancies that would prevent full compliance with the purposes and provisions of MEPA. Any such discrepancy was to have been reported to the governor and the EQC by July 1, 1972, along with proposed measures for remedying the conflict. The apparent failure of one agency to diligently comply with this directive may have been the cause of costly litigation several years later. In 1979, the Montana Supreme Court issued a decision in *Kadillak v. Anaconda Company,* a case which involved a conflict between MEPA and the Hard-Rock Mining Act; the statutory time frame for agency action on permit applications was incompatible with the EIS requirement under MEPA. Following clear federal precedent, the court held that because this constituted an irreconcilable conflict, an EIS would not be required. Interestingly, the 1977 Legislature had already amended the Hard-Rock Mining Act to create flexibility and allow for EIS preparation in subsequent applications.

Nonetheless, in the first year of its existence MEPA resulted in the production of 64 EIS's. Although there is no real indication of whether or not these documents were considered in the decision-making process, this does represent an attempt at good faith compliance by most agencies. If the system did not operate entirely as the legislature had intended, it was perhaps due to a genuine lack of understanding on the part of the agencies, including the EQC, as to what role an EIS should play in the decision process. The early EQC guidelines lacked a discussion of how an EIS was expected to be utilized. It was not until the rules had been revised for the third time that the EQC included a discussion of the EIS's role in agency planning and decision making. Significantly, this inclusion occurred only after it had been determined that the EQC actually lacked any authority to impose its guidelines on executive branch agencies.

The EQC's authority to act in this regard had previously been questioned and even the EQC seemed to exhibit a lack of confidence in its ability to prescribe rules. It was not until 1975, however, that this issue was resolved. On April 17, the First Judicial District Court, in the *Montana Wilderness Association v. The Board of Land Commissioners*, held that the EQC's guidelines were unenforceable, since the powers of the EQC staff were limited to the making of studies and recommendations. The court in its dicta also strongly criticized both the executive and legislative branches of the state government for failing to develop a workable system for effective enforcement of MEPA.

This chastisement resulted in an almost immediate response by the governor. On April 30, 1975, Thomas Judge issued an executive order to create a commission on environmental quality, the CEQ, which was directed to work with the EQC and other agencies of the executive branch and the public to promulgate uniform MEPA rules. In November, CEQ held a public hearing on proposed rules and on January 15, 1976, it issued a final revision of the model rules which incorporated, to a certain extent, the comments and suggestions received at the hearing. These rules did not, however, outline the proper use of an EIS, as the May 1975 EQC guidelines did. The executive branch agencies, when adopting these rules, also did not choose to include any such provision.

An EQC staff report by Steven Perlmutter, entitled *The Montana Environmental Policy Act - The First Five Years*, provides a general understanding of the early years of MEPA implementation. Perlmutter took the position that MEPA does have substantive importance and imposes definite requirements on agency actions. While in his view the EIS was often relegated to an improper subordinate role or perhaps even used as a mere defense against litigation, he did admit that the EIS process was partially serving its purpose. His principal reason for this conclusion was that public awareness and participation in the EIS process tended to make agencies more aware of environmental concerns. This increased citizen participation discouraged decisions being made behind closed doors without adequate supporting data. Additionally, he concluded that private developers were beginning to plan for environmental factors prior to seeking agency approval for their projects.

Looking beyond the first five years of MEPA, no drastic changes have occurred in agency treatment and perception of MEPA and the EIS process. Prior to the recent action by the district court in the *Cabinet Resource Group* case, the significance of which has not yet been fully assessed, only two notable events have occurred since Perlmutter's report was written. The first is the second decision in *Beaver Creek South*. Even though this did not decide the procedural versus substantive issue, it continues to be cited by many as having done so. For that reason, in a practical sense, it has contributed to MEPA being regarded as a strictly procedural statute.

The other noteworthy event was the re-establishment of the Commission on Environmental Quality by Governor Judge on March 8, 1978, to update the model MEPA rules. Following a public hearing, the CEQ issued a revised set of model rules which were adopted by most of the executive agencies. While the revision was not a sharp departure from the earlier version, it did attempt to clarify several ambiguities. Interestingly, the rules in draft form excluded the promulgation of agency rules from the EIS requirements. Because a bill attempting to do the same had been defeated by the 1979 Legislature, the CEQ was harshly criticized and chose to omit this from its final report.

Since the adoption of the new rules, there appears to be a growing tendency for agencies to view the EIS process as an important aid in decision making. If this is the case, then it follows that environmental impact statements may be serving a substantive role in many instances. If MEPA was intended to be substantive, then perhaps most agencies are now in at least partial compliance with its mandates. On the other hand, if MEPA is found to be merely procedural, then all agencies may already be in full compliance.

HARD-ROCK MINING STUDY

During the 1981-82 legislative interim, the EQC completed a study of the hard-rock mining industry in Montana. The study, requested by the 1981 Legislature in HJR 66, focused on the social and economic impacts of large-scale mining. The study looked at the question: Are the tax revenues generated by local governments from the development adequate to offset the costs incurred for supplying government services and facilities? The subcommittee that conducted the study found that total local tax revenues generally exceed government expenditures and that the existing level of taxation was adequate to offset initial impacts. Of equal importance was the discovery that tax revenues, while ample in size, were not always distributed equitably among affected government units. This is because a mineral development may locate in one jurisdiction, establishing a significant tax base there, but cause a substantial population influx in an adjacent jurisdiction that receives little or no direct revenue from the development.

To alleviate this problem the subcommittee developed a plan that would enable all affected government units to levy taxes against a portion of the mineral developer's tax base. This plan was presented to the 1983 Legislature, along with four other measures proposed by the subcommittee. The tax base sharing proposal and two of the other proposals passed and became law. One of the other two bills amended the Hard-Rock Mining Impact Act, a 1981 measure that deals with front-end impacts of large-scale mining. The amendments did not bring about any substantive changes but merely refined the mechanics of the act. The remaining successful bill was designed to mitigate the tail-end impacts that result from the shutdown of mining operations. It increased slightly the rate of taxation for the industry under the Metalliferous Mines License Tax and allocated a portion of the revenues to a newly created impact trust account. The account is intended for relief to governments that experience severe economic hardships due to mining slowdowns or shutdowns.

The only bill culminating from the EQC's mining study that did not receive legislative approval was a proposed amendment to the purpose statement contained in the Resource Indemnity Trust Tax Act. Because the subcommittee found that revenues collected under that act from the extractive industries were being used for a variety of general state programs, it sought to add language that made it expressly clear that funds collected thereunder *may* be used to mitigate adverse impacts directly related to the extraction of non-renewable resources. Even though the bill failed, funds may still be used for such purposes.

If you are interested in the EQC Hard-Rock Report, there are some copies still available. Contact the EQC office.

PURPA

In 1978, the U.S. Congress responded to the existing national energy crisis by passing the Public Utilities Regulatory Policy Act (PURPA). One of five statutes included in the National Energy Act, PURPA was designed to encourage small-scale power facilities (less than 80 megawatt) to generate electricity from solid waste, geothermal resources, or renewable resources (solar, wind and water). Under PURPA, each electric utility is required to purchase available electricity from qualifying small producers. The act also requires the Federal Energy Regulatory Commission (FERC) to prescribe and periodically revise rules to encourage cogeneration and small-scale power production.

The rules FERC issued have been exceptionally favorable to developers of small-scale hydropower. Utilities are required to pay developers rates equivalent to "full avoided costs," or the cost the utility would have had to pay to obtain additional power by generation or purchase. A second advantage allowed by FERC rules gives blanket authority to small-scale power producers to connect with utilities without meeting substantive and procedural requirements of the Federal Power Act, i.e. requiring that interconnection serve the public interest, encourage energy conservation and improve the receiving utility's efficiency and reliability.

Stimulated by these incentives, developers have created a "gold rush" atmosphere in their applications for preliminary permits. Because a preliminary permit gives a developer priority to a site for 18-36 months, some developers have made applications with little more information than data from a topographic map and estimates of stream discharges. Although many of these applications are later abandoned by the developer, the large number of applications has caused confusion and added a burden for permitting agencies.

Additional confusion and concern has resulted from FERC rules that would exempt from licensing procedures sites for hydropower of five megawatts capacity or less. In these instances, FERC would require only minimal data on available water, leaving the remaining permit evaluations to state agencies. State agencies are not authorized to grant or deny permits or licenses, but only to establish permit conditions.

In many of the early discussions and supporting statements for PURPA, small-scale hydroelectric power was described as environmentally benign. Evidence is now mounting to show this is not always true. Some sites can be developed with little or no impact on other resources, but development at other sites may be very detrimental to fisheries, wildlife and water quality. The investigations necessary to make these determinations are time-consuming and difficult. There are no guidelines for either the developer or the permitting agencies.

The EQC first became involved with these issues in 1978 when it oversaw a National Conference of State Legislatures study of hydropower potential in Montana. As a result of this study, the 1981 Legislature provided tax incentives for small-scale power producers in Montana.

In 1982 the EQC staff held an interagency meeting to discuss the status of small-scale hydroelectric power

development, along with environmental concerns and possible solutions to existing problems. The agencies represented at the meeting were the U.S. Geological Survey, Forest Service, and Fish and Wildlife Service, and the Montana Departments of Health and Environmental Sciences, Natural Resources and Conservation and Fish, Wildlife and Parks, and Montana State University.

A problem common to all agencies was the lack of a coordinating agency that would receive permit applications, coordinate interagency review, and maintain necessary records. Not only would such an agency save duplication of effort by agencies, but it would simplify the permitting process for developers.

A second common problem was the difficulty of providing timely and adequate evaluations with existing manpower and budgets. Many proposed sites are in remote areas where baseline data on water quantity and environmental conditions are lacking.

Some important environmental concerns expressed by agency personnel were:

- dewatering of important fish habitat and spawning sites where stream water is diverted through a penstock to a turbine. Some proposed sites would dewater several miles of stream.
- dams may cause detrimental changes in habitat and flow regimes, or block fish migrations.
- erosion and sedimentation of the affected stream due to road and power plant construction and streambank disturbance, or erosion due to road and transmission line construction, especially in upper elevations where soil and vegetation cover are sparse.
- opening of roadless areas with impacts on wildlife.
- impacts on water quality due to the filling and cleanout of sediment basins, nitrogen gas supersaturation and temperature changes.

The cumulative impacts of multiple developments within a single drainage is a particular concern. Although a single site may not cause significant damage, multiple developments could dramatically impact other resources.

Finally, concern was expressed that environmental costs are not being considered in determining benefits of a project. A few developers stand to make financial gains, but are the benefits to the public sufficient to justify the project?

Some changes in the existing small-scale hydroelectric permit process have been suggested:

1. A central agency should be given responsibility for receiving, processing and recording permit applications.

2. A moratorium on permit applications should be imposed until guidelines, environmental assessments and power demands are evaluated and established.

3. Site development plans and design should be provided to all regulatory agencies in advance of any construction. Modifications of design may allow corrections before impacts occur.

ENVIRONMENT and ECONOMY FORUM

The EQC has undertaken several activities since 1979 to investigate the impacts that Montana's environmental regulations have on the state's economy.

In 1979 and 1980, the EQC studied ways to encourage economic development that is compatible with environmental quality. That effort produced two reports: "Promoting Industrial Growth and Diversification" and "A Study of Industry Experiences and Attitudes in Montana."

After the closure of the Anaconda Company's operations in Anaconda and Great Falls, the 1981 Legislature established a Select Committee on Economic Problems to study, among other things, the reasons for the closures and the causes of the decline of traditional major industries in Montana. The committee drew up no major conclusions or recommendations for change. At the same time, an EQC subcommittee was cooperating with an interim legislative committee to determine the impact of environmental regulations on the economic, social and physical environment.

The subcommittee decided to adopt a study plan, the core of which was a public forum that would focus on the various environmental regulations in the state and the costs and benefits to the total environment. To assure that the forum included representation from as many aspects of Montana's economy and environment as possible, the EQC established a steering committee with participation from industry, government and conservation interests. The purpose of the steering committee was to assist the EQC in structuring the forum, determining the issues to be considered, selecting participants, and obtaining broad participation in the forum.

The decision was made at one of the early steering committee meetings to request information from the various sectors represented on the environmental regulations that were considered most burdensome and/or ineffective. However, with a few exceptions the various organizations were unwilling to release the information because of the fear that their opponents

would then know what issues they would focus on during the upcoming legislative session. At this point, the subcommittee decided to proceed with the forum although the specific issues could not be effectively targeted. Throughout the planning process, the steering committee was contacted and given the opportunity to make suggestions which were often implemented. Although the final forum became more theoretical and generalized than originally intended, specific areas were examined during the case study section.

The EQC intended that the forum provide a basis for developing communication and cooperation between all interests concerned about the economic and environmental well being of the state. The council feels that this goal was largely accomplished, and that the forum established a firm foundation on which to build future cooperative efforts to achieve economic development conforming to reasonable environmental standards.

The EQC published proceedings of the forum for distribution to the legislature in 1983. The proceedings, available from the EQC office, contain a summary of many of the formal presentations and comments from members of the audience. They also contain recommendations adopted by the EQC as a result of the forum.

SHOTHOLES

Seismic exploration for oil and gas has occurred over large areas of Montana during the past decade. The acceleration of this activity since 1973 has created concerns and problems for many landowners whose property has been leased for exploration. Although many different concerns have been expressed, a primary issue has been the impact of seismic exploration on groundwater resources and agricultural lands. Some seismic crews have failed to meet their obligations in restoring seismic "shotholes," while some others have not used proper plugging techniques.

Seismic explorations frequently use explosive charges placed at the bottom of holes that are drilled no deeper than 200 feet. The drilling of the hole may leave surface deposits of drill cuttings; the explosion may create small craters on the surface and the drilling and explosion may allow contamination of groundwater aquifers. The failure of some seismic crews to prevent these problems has caused concerned landowners to request additional regulations and improved methods for plugging shotholes.

In an effort to solve these problems, the Northeast Montana Land and Mineral Owners Association requested assistance from the industry, the Montana Bureau of Mines and Geology, and the Environmental Quality Council. Early discussions led to the organization of a special task force under the auspices of the Montana Petroleum Association. The task force met at various locations in the state to discuss proposed changes in regulations and guidelines for plugging seismic shotholes.

The task force and interested participants agreed on procedures and rules needed to protect water and land resources. An application for the proposed rule changes was approved by the Board of Oil and Gas Conservation during its meeting on June 24, 1982. The rule changes specify the procedures for filling and plugging seismic shotholes, stabilizing artesian water deposits penetrated by seismic holes, and other reclamation efforts.

The Board of Oil and Gas Conservation recommended legislative changes that would authorize the board to adopt rules requiring adequate identification of geophysical exploration crews operating in this state and designating areas where geophysical exploration and activities may be prohibited.

Senate Bill 350, introduced by Senator Larry Tveit in the 1983 session, amended existing statutes to require the board to adopt the recommended rule changes and to modify the required methods for plugging seismic shotholes. This legislation was adopted by the legislature and signed by the governor.

REGAL PROGRAM

In 1975, Montana began the nation's first state-funded financial incentive program to develop emerging renewable energy technologies. The program was designed to decrease Montana's reliance on non-renewable fossil fuels, and increase solar, wind,

biomass, geothermal and small-scale hydro renewable energy. Funded by a percentage of the state's coal severance tax revenue, the program provided for the research, development and demonstration of these energy sources.

The legislature assigned the Department of Natural Resources and Conservation to administer the program. DNRC began issuing grants to individuals and businesses in 1976. In its first few years, the program concentrated heavily on solar technologies. But as the nation's and state's energy pictures developed, so did the competition for the renewable energy grants. Technologies for a variety of renewable energy sources matured at the same time the program was coming under closer scrutiny by the legislature and the public. This interest was especially high because of the national controversy over Montana's coal severance tax.

Although the program's original legislation had been amended only once since its 1975 adoption, the 1981 Legislature revamped it in a three-pronged effort.

These legislative changes reflected a dissatisfaction among the majority of legislators with the administration of the program. Many legislators believed that there had been no demonstrable reduction of the state's reliance on fossil fuels. Charges surfaced about favoritism in issuing grants, and about too much emphasis on solar technologies. In addition, many legislators felt a lack of follow-up, reporting, and financial accountability for the grants detracted from the program's effectiveness.

Representative Joe Quilici (D-Butte) sponsored HB 398, which sought to correct these deficiencies and tighten administration of the program. The bill limited the funding of demonstration projects to those with good potential for saving non-renewable energy and prohibited those demonstration projects that were similar to unproductive projects or were near a similar project. It also required projects that received grants to fit within the goals of the statute. In addition, the legislation required the DNRC to monitor grants and loans it made and report to the legislature on the effectiveness of funded projects or programs. Representative Quilici's bill also required DNRC to submit periodic reports to the Environmental Quality Council for review and evaluation, and directed the EQC to make recommendations to assure the greatest possible benefit from the program.

EQC Role

EQC Chairman Rep. Dennis Iverson (R-Whitlash) delegated the oversight task to a subcommittee headed by Senator Harold Dover (R-Lewistown) and composed of Dover and two public EQC members, Dr. Leslie Pengelly and Glen Rugg. The subcommittee was required to report to the full EQC which, in turn, agreed to develop the final report and recommendations.

As the EQC staff began to formulate a plan for its oversight activities, it became clear that other legislative entities had an interest in the program as well, including the Legislative Audit Committee and the Coal Tax Oversight Subcommittee.

During the spring of 1981, the Legislative Auditor had released a report on selected energy grant programs, including the renewable alternative energy program. The report identified several areas of concern, including program direction, monitoring of grants, contract provisions, fund balance, documentation and contracted services. The Legislative Auditor issued seven recommendations for the DNRC, including establishing clear goals and monitoring progress of grantees.

Wishing to avoid duplicating the Legislative Auditor's work, the EQC Alternative Energy Subcommittee held its first meeting in September 1981 with representatives of the Auditor's office. At that time, the subcommittee agreed to build on the Auditor's recommendations and monitor the program to see that it met its goals; that criteria for evaluating projects receiving funding were adequate; that its rules for administering the program were workable, fair, and within legislative intent; and, that the legislative direction for the program was clear and sufficient for administration of an effective program. The subcommittee decided to focus on development of the commercialization and loan elements of the program, suggesting that the EQC could be a sounding board for policies for improvement of the program, rather than an overseer to point out faults after the fact.

EQC staff communicated frequently with DNRC staff over the following 18 months to carry out the subcommittee's direction. The subcommittee again met with DNRC representatives in January 1982 to review the methodology the department used to select proposals submitted to them. The subcommittee reviewed proposed rules implementing commercialization and loan procedures as well as generally revamping the program.

At the same time, the EQC subcommittee met with the Coal Tax Oversight Subcommittee, which oversees the spending of coal tax revenues. Again in order to avoid duplication, the two subcommittees agreed to divide responsibilities. They agreed to have the EQC focus on adequacy of administration of the program, while CTO would investigate whether or not it was appropriate for the program to be funded by coal tax money and at what level.

EQC subcommittee members and staff also met periodically with the DNRC Renewable Energy Advisory Council (REAC) to coordinate recommendations for effective administration of the program.

DNRC Changes

Acknowledging flaws in the way grants had been distributed in the past and believing that a strong commitment to development of alternatives to non-renewable energy sources represents a compelling defense of the coal severance tax, DNRC recently completed a major restructuring of the program.

DNRC made the following changes:

1) DNRC will closely monitor the projects funded to insure completion and that money is appropriately spent;

2) Emphasis will be placed on stronger conservation measures to complement the efficiency of alternative energy projects;

3) As some forms of alternative energy reach the commercialization stage, money will be awarded as loans as well as grants. This will minimize interference with the market and the state will receive a direct monetary return on its investment;

4) Criteria for awarding grants and loans will be strengthened, including an emphasis on competence of the applicant, engineering and technical soundness, need for the technology and the audience targeted by the project. The projects will be given points for various objective criteria, and those with the highest scores will be funded. In this way, the DNRC has eliminated much of the "politics" previously involved in the process; and

5) DNRC will advertise the program more widely.

Another important aspect of the program's reorganization is a study entitled the Sustainable Energy Assessment (SEA), which will help determine the end-use of energy generated and consumed in Montana. This assessment, anticipated in 1985, will help the department to direct the program's resources to where they will be most effective. The SEA attempts to identify the most productive opportunities for conservation and renewable energy, the resources available for energy production and the most appropriate systems for meeting energy demands with available resources.

In carrying out legislative direction to institute a loan program for commercialization of renewable energy sources, DNRC worked closely with banks, credit unions and savings and loan institutions. This process should familiarize lending institutions with promising renewable technologies and stimulate the funneling of private funds to worthy projects. DNRC and the REAC first review loan applications for technical soundness, then authorize qualified projects to be submitted to a financial institution of the applicant's choice.

There was some confusion in the first loan cycle; some applicants assumed that these loans would not be subject to the normal requirements of collateralization. However, the financial institution evaluates these applications as they would other requests for commercial loans. As part of the review process, the lending institution carries out credit checks and other customary loan origination procedures. This came under some initial criticism from applicants who questioned the advantages of the state program under these conditions. However, DNRC and the subcommittee believe that this process helps insure against the loss of state funds while still stimulating sound projects at interest rates lower than for conventional loans.

To incorporate this loans program and improve the grants program, DNRC adopted revised rules in the spring of 1982. Among the key elements of the revised rules were:

... the residency requirement for applicants is eliminated, but only projects conducted in-state will be funded;

... the preference given to small-scale projects is eliminated;

... the maximum single grant or loan is 10 percent of the annual appropriation for the program;

...projects to commercialize alternative energy will be considered for loans only;

... loans will be made through financial institutions with the department providing up to 90 percent and the financial institution providing the remainder;

... the interest rate on the state share of any loan must be a fixed rate equal to the Federal Reserve Discount Rate on the day the loan closes;

... the financial institution that finances the non-state portion of a loan for a project sets its own interest rate, either fixed or variable; and,

... demonstration project eligibility is restricted, with greater emphasis on public and private nonprofit projects.

1983 Legislature

To further improve the program, DNRC recommended to the 1983 Legislature the adoption of SB 356, sponsored by Senator John Mohar (D-Troy), to allow for research, development, and demonstration grants for energy conservation and to remove the prohibition on private ownership and control of research information. The program administrators found that in many instances, conservation measures were inextricably tied to development of alternative energy technologies. Therefore it was often difficult to distinguish between the two in a project. The department believed that the essential conservation elements of the projects should also be encouraged through the financial incentives of the grant program. The 1983 Legislature concurred.

REAC

Another essential element in effective implementation of the REGAL program is the Renewable Energy Advisory Council (REAC). Provided for in the administrative rules, REAC is composed of legislators and other citizens with an interest and expertise in renewable energy.

The Renewable Energy Advisory Council meets several times during the biennium to review DNRC staff recommendations for grant and loan projects and to advise the department on policy issues. Although the DNRC director holds final authority for approval of projects, he generally accepts any modifications made by REAC to staff recommendations.

EQC Recommendations

Following its review of the REGAL program, the EQC adopted three recommendations:

1) The department should improve public involvement in both the review of projects for funding and the development of policy for the program. Although exclusion of extraneous political influence on funding projects is desirable, some community input to the review process could be beneficial. Evaluating the public benefit of projects could be enhanced through better public notice of the review process.

2) The department should consult more frequently with REAC and EQC on policy issues. Until the November 3, 1982 meeting, REAC largely responded only to department staff recommendations. REAC members possess expertise and a perspective that can further enhance administration of the program. For example, the loan program has become more responsive to applicant's needs by the establishment of three loan cycles per year, as recommended by REAC.

3) The department should submit to EQC its preliminary environmental reviews under the Montana Environmental Policy Act (MEPA). While all the REGAL projects are potentially beneficial to certain aspects of environmental quality, some may have significant negative impacts as well. The EQC is interested in evaluating the overall environmental effect of these projects.

GROUND-WATER

Groundwater is clearly one of Montana's most vital natural resources. Nearly one-half of the state's domestic water needs are supplied by groundwater; in many locations it serves as the only available freshwater for both domestic and agricultural purposes. But despite this obvious importance, groundwater and the environmental conditions that influence its availability and quality are poorly understood. At a time when water resource issues are of particular concern to Montanans, it is essential that information on groundwater is available to decision makers.

Consistent with its duties under MEPA, the EQC initiated discussion of groundwater management issues and needs. Working with specialists from several state and federal agencies, the EQC organized the Montana Groundwater Conference, which was held in Great Falls in April 1982.

The conference involved individuals from industry, agriculture, regulatory and planning agencies, local and county governments, legislators and scientists. Conference discussion sessions resulted in a series of recommendations for state action.

As a result of the conference recommendations, the EQC formally requested that Governor Ted Schwinden appoint a Groundwater Advisory Council to investigate groundwater resources and management needs for the future. The governor appointed a 16-member council on January 14, 1983.

To assist the Advisory Council's study, an ad hoc technical committee organized by the DNRC developed a draft report on the Status of Groundwater in Montana. The report, which outlines information on the state's groundwater resources, provides a basic discussion of issues that must be considered in developing a groundwater management strategy. A final report, complete with council recommendations, will be issued by the Advisory Council upon completion of its study in January 1985.

EQC is continuing its investigation on groundwater issues in Montana. For a copy of the proceedings of the Montana Groundwater Conference, contact EQC.

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ACRONYMS

BPA	Bonneville Power Administration
DFWP	Department of Fish, Wildlife and Parks
DHES	Department of Health and Environmental Sciences
DNRC	Department of Natural Resources and Conservation
DOA	Department of Administration
DOC	Department of Commerce
DOH	Department of Highways
DSL	Department of State Lands
EQC	Environmental Quality Council
FERC	Federal Energy Regulatory Commission
HB	House Bill
HJR	House Joint Resolution
MEPA	Montana Environmental Policy Act
MFSA	Major Facility Siting Act
MMLT	Metalliferous Mines License Tax
PSC	Public Service Commission
PURPA	Public Utilities Regulatory Policy Act
SB	Senate Bill
SJR	Senate Joint Resolution
SRS	Department of Social and Rehabilitation Services
RIT	Resource Indemnity Trust

Air Quality

Passed:

SB 291 Eck Ensures that the time limit for issuance of a decision on an air quality permit application does not occur prior to issuance of an environmental impact statement when one is prepared by an agency other than the Air Quality Bureau.

Amending 75-2-211

Third Reading Votes: Senate 48-0, House 94-0

SB 349 Dover Authorizes the Board of Health and Environmental Sciences to grant exemptions and exemption renewals to air quality rules for periods of more than one year. Prior to passage of this act, emission standards exemptions had to be renewed on a yearly basis until a site achieved compliance.

Amending 75-2-212

Third Reading Votes: Senate 48-0, House 91-6

HB 352 Ream Authorizes the DHES to enforce conditions and limitations specified in air quality permits through the imposition of civil and criminal penalties. Previously, only violations of agency rules or statute could be penalized.

Amending 75-2-401, 75-2-403, 75-2-412, and 75-2-413

Third Reading Votes: House 92-4, Senate 46-0

Killed:

HB 445 Ellerd Requiring a non-smoking area to be designated in all enclosed public places (except taverns) and prohibiting the designation of an entire area of a public place as a smoking area.

Amending 50-40-104

Killed on Senate Second Reading

Energy

Major Facility Siting

Passed:

HB 263 Ream Amends the Montana MFSA to delete the provision exempting federal facilities from its coverage.

Amending 75-20-201 and 75-20-202

Third Reading Votes: House 92-5, Senate 47-0

Killed:

HJR 39 D. Brown Directing the EQC to conduct a study of the MFSA and monitor the DNRC's revision of rules implementing the act.

Died in House Natural Resources Committee

SB 275 Keating Generally revising the MFSA. This bill would, among other things, have:

- removed the requirement for studying alternative sites and technologies;
- removed the requirement that need be demonstrated for new major facilities that would not be owned or operated by utilities (such as synfuel plants);
- shortened the period for agency review;
- removed provisions allowing agencies to make recommendations to the Board of Health;
- eliminated "cost" as a criteria for determining when a facility is major;
- and decreased the filing fees required from facilities costing over $1 billion.

Amending Title 70, Chapter 2, MCA

Killed on Senate Third Reading

HB 676 Ream Requiring that monies collected by DNRC from conditions placed on certificates issued by the Board of Natural Resources and Conservation under the MFSA be deposited into the DNRC earmarked revenue fund. This fund is utilized by the department for administering the MFSA.

Died in House Natural Resources Committee

HB 803 Harp Requiring the DNRC to adopt specific standards for issuance of Certificates of Environmental Compatibility and Public Need.

Amending 75-5-105, 75-5-301, and 75-5-503

Renewable Energy and Conservation

Passed:

HB 135 Yardley Provides a statutory framework for treating wind and solar energy easements as servitudes attached to the land.

Amending 70-17-101

Third Reading Votes: House 93-3; Senate 35-13

HB 264 McBride Prolongs an existing program that provides credits against individual income taxes for persons who install alternative energy systems in their principal dwelling. The credit will continue to be available for installations made before December 31, 1986 instead of expiring December 31, 1982.

Amending 15-32-201

Third Reading Votes: House 93-0; Senate 36-13

SB 356 Mohar Makes funding available from the Alternative Energy Research and Demonstration Account for projects that involve research, development, or demonstration of increased energy efficiency and conservation. Previously grants and loans from this account were available only for renewable energy projects and not to those enhancing conservation. This act also removes a prohibition on private ownership and control of information obtained through this program and allows grants to extend beyond one year provided all funding is accrued only from the year the grant is authorized.

Amending 90-4-101 through 90-4-106

Third Reading Votes: Senate 40-8; House 74-24

SB 430 Halligan Includes cogeneration as a qualifying small power production facility for purposes of selling electricity to public utilities and electric cooperatives at rates consistent with the PURPA.

Amending 69-3-601, 69-3-602, and 69-3-604

Third Reading Votes: Senate 48-0; House 77-20

SB 456 Fuller Allows an electric or gas utility to purchase or invest in cost effective energy conservation measures. The PSC is required to include conservation expenditures in utilities' rate bases and allow them a 2% higher incremental rate of return on investments in such measures.

Amending 15-32-107

Third Reading Votes: Senate 48-0; House 96-0

HB 755 Yardley Provides a credit against business income tax liability for capital expenditures for wind power generating systems. Eligible investments of over $5000 are entitled to a credit in an amount equal to 35% of the cost of the system. The credit cannot exceed a taxpayer's total liability in any year but can be carried forward for as many as seven years.

Third Reading Votes: House 99-1; Senate 40-8

Killed:

HB 70 Fabrega Providing a credit against corporate and individual income tax liability for capital expenditures of $50,000 or more for commercial systems utilizing recognized nonfossil forms of energy generation. Eligible capital expenditures would have been reduced by the amount of any state or federal grants received. The credit would have been as much as 35% of eligible costs, and could have been carried forward.

Died in House Select Committee on Economic Development

SB 283 Fuller Providing a tax credit for the installation of solar energy systems in residential dwellings equal to 20% of the cost of installing such a system, but not to exceed $1000 or $2000 if married filing a joint return. This credit would have replaced the existing alternative energy tax credit.

Repealing 15-32-201 through 15-32-203

Killed on House Second Reading

HB 695 Kadas Requiring the owners of residential dwelling units to provide detailed information on energy consumption to prospective renters or buyers upon request. Penalties would have been provided for.

Died in House Business and Industry Committee

HB 736 Ream Creating a tax credit for the installation of low emission wood or biomass combustion devices and extending the existing alternative energy tax credit for ten years.

Amending 15-32-102, 15-32-201, and 15-32-203

Died in House Taxation Committee

HB 752 Kadas Requiring the DOC to adopt energy efficiency standards for electrical appliances in an effort to reduce the rate of domestic energy consumption. After the standards had taken effect, appliances not certified as meeting those standards could not have been sold in Montana.

Killed on House Third Reading

HB 765 Kadas Requiring gas utilities with sales exceeding ten billion cubic feet per year and electric utilities with sales exceeding 500 million kilowatt-hours per year to invest in cost-effective conservation measures for use by their residential customers.

Amending 15-32-107

Killed on House Second Reading

HB 790 D. Brown Expanding the Renewable Energy Grant and Loan Program to include funding for projects that enhance the efficient use of nonrenewable energy.

Amending 90-4-101, 90-4-102, 90-4-104, and 90-4-105

Died in House Business and Industry Committee

HB 839 Nilson Requiring energy audits be performed on buildings owned or leased by the state to identify conservation measures that could be implemented. Cost-effective energy conservation measures would have been required to be implemented by June 30, 1985 when the costs for doing so would be less than or equal to the potential savings that would result in a 12-month period.

Died in House State Administration Committee

HB 867 Fabrega Providing a credit against income tax liability for investments of over $5000 in the manufacture of energy conservation products. The credit would have equaled 35% of the investment and could have been carried forward for up to seven years.

Died in House Taxation Committee

HB 868 Fabrega Providing a 35% credit against income tax liability for investments over $5,000 in the manufacture of renewable energy equipment.

Died in House Taxation Committee

HB 869 Fabrega Providing a 35% credit against income tax liability for investments of over $5,000 in the manufacture of energy efficient, low emission, wood-burning heaters.

Died in House Taxation Committee

Other

Passed:

HJR 2 Winslow Requests an examination by the Coal Tax Oversight Subcommittee of the impacts on local government units that might result from a proposed coal gasification plant in Wibaux, MT. In addition to studying impacts in Montana, the subcommittee is requested to cooperate with a sister committee in North Dakota which is examining impacts from this project in that state.

Third Reading Votes: House 94-5; Senate 47-1

HJR 14 Connelly Urges the United States Congress to enact legislation that provides for annual budget review of the BPA by the Pacific Northwest Electric Power and Conservation Planning Council.

Third Reading Votes: House 82-1; Senate 48-1

SJR 17 Elliott Urges the BPA to adopt a rate structure that will provide lower rates for its direct service industrial customers.

Third Reading Votes: Senate 46-0; House 58-35

HJR 18 Quilici Requests that a committee of legislators be assigned to review the final power plan developed by the Pacific Northwest Electric Power and Conservation Planning Council and make recommendations for appropriate legislation to implement the plan.

Third Reading Votes: House 98-0; Senate 41-6

HB 747 Marks Includes electric transmission lines (500-kv or larger) in the class of property subject to the Privilege Tax. This tax is imposed on the gainful use of property that is otherwise tax exempt.

Amending 15-23-101 and 15-24-1203
Third Reading Votes: House 97-1; Senate 49-1

Killed:

SJR 19 Thomas Requesting an interim committee be appointed to study factors affecting power rates by the various classes of utility users.

Killed on House Second Reading

HB 217 Waldron Appropriating $1,668,724 from the general fund to increase Low-Income Energy Assistance Block Grants administered by the SRS.

Died in House Appropriations Committee

HB 707 Ramirez Authorizing the issuance and sale of general obligation bonds to finance the conversion of the gas-fired heating plant at the Pine Hills School to a coal-fired plant.

Killed on House Second Reading

HB 708 Quilici Establishing a statutory requirement for administration of the Low-Income Energy Assistance Program by the SRS as provided for in federal law. Administration at the local level would have been the responsibility of community nonprofit entities representing one or more of the governor's planning councils.

Amending 90-4-202
Died in Senate Public Health, Welfare, and Safety Committe

Environmental Quality

General

Passed:

SB 101 Graham Generally revises and clarifies laws relating to health, the environment, and natural resources. This bill, by request of the Code Commissioner, seeks to remedy internal contradictions, incorrect citations, outdated references, and constitutional conflicts identified by the Montana Supreme Court.

Amending 50-31-301, 50-38-235, 50-51-211, 75-70-303, 82-11-101, 87-1-605, 87-2-805, 87-4-122, 87-4-128, and 90-5-110;

Repealing 49-4-201 and 87-4-126

Third Reading Votes: Senate 47-0; House 99-0

HB 228 Quilici Seeks to promote consistency and continuity in the adoption and application of environmental rules. Specifically, this act declares a state policy not to change the requirements for an environmental permit after an application has been completed without first taking into account the financial commitment of the applicant.

Amending 90-1-101
Third Reading Votes: House 100-0; Senate 50-0

SB 400 B. Brown Entitles persons suffering injuries outside of the state as a result of pollution originating within the state to seek redress in Montana courts provided the jurisdiction where the injury occurs offers reciprocal rights to persons in Montana.

Third Reading Votes: Senate 47-2; House 94-3

HB 785 D. Brown Establishes a planning framework for the development of a Montana Natural Heritage Program as an initial step in establishing a centralized natural resource information system within the DOA. An advisory committee composed of representatives from various state agencies involved in gathering natural resource information is created. This committee must establish criteria for data collection, i.e. identify new and existing sources and methods for acquisition, storage, and retrieval of natural resource data. The information acquired shall be made available to the public and the DOA may charge for use of the data commensurate with costs.

Third Reading Votes: House 73-22; Senate 48-0

HB 800 Vincent Creates a Youth Conservation Corps within the Department of Labor and Industry in order to provide employment opportunities for youth while enhancing the state's natural resources. The program will be limited to the summer months and to young adults between the ages of 15 and 21. This program must secure at least $25,000 in private donations for administration purposes and takes effect upon passage of a federal act establishing a federal conservation corps.

Third Reading Votes: House 94-5; Senate 48—0

Montana Environmental Policy Act

Killed:

SJR 20 Lee Requesting the EQC to conduct an interim study of the MEPA. The study would have focused primarily on whether or not MEPA should expand agency authority to deny or condition environmental permits in consideration of adverse environmental impacts.

Died in Senate Natural Resources Committee

SB 368 Lee Amending MEPA to explicitly state that it does not expand agency authority beyond existing authorizations otherwise possessed by boards, commissions, and agencies of the state.

Amending 75-1-105
Killed on Senate Second Reading

SB 406 Gage Exempting the DHES from MEPA in its review of subdivisions. The department would have been required to consider the environmental assessments submitted to local governments by developers under the Montana Subdivision and Platting Act.

Amending 75-1-201, 76-3-603, 76-4-104, and 76-4-129
Died in House Natural Resources Committee

Fish and Wildlife

Hunting, Fishing, Trapping and Outfitting

See Also HB 804

Passed:

SB 126 E. Smith Permits a person who owns real property for the primary pursuit of *bona fide* agricultural interests to provide outfitting services on such property for compensation without obtaining a license.

Amending 87-4-101
Third Reading Votes: Senate 49-0; House 79-13

SB 132 Jacobson Reestablishes the Montana Outfitters' Council under existing statutory authority and rules and provides for sunset review in 1989. A procedure for filling a vacancy on the council and fixing council members' compensation is also included. The DFWP is authorized under this act to establish outfitter license fees.

Amending 2-8-103, 2-15-3403, and 87-4-127
Third Reading Votes: Senate 44-2; House 92-7

HB 335 Nilson Increases the fees for certain hunting, trapping, and fishing licenses and establishes an antlerless elk hunting license. The antlerless elk hunting license will be applicable only to areas designated by the Fish and Game Commission and seasons will coincide with the regular elk season. Fee increases become effective March 1, 1984, except for deer "A" tags and elk tags, which will increase May 1, 1983. Increases will be as follows:

License	*Before HB 335*	*After HB 335*
Resident Fishing	$7	$8
2-day Nonresident Fishing	4	6
Resident Deer "A" Tag	8	9
Resident Deer "B" Tag	5	6
Resident Elk Tag	9	10
Antlerless Elk Tag	—	8
Nonresident Big Game Comb.	275	300
Nonresident Mountain Lion	100	300
Resident Mountain Lion	5	10
Trapper's License	10	20
Resident Moose	25	50
Resident Mountain Goat	15	50
Resident Antelope	5	6
Resident Grizzly Bear	25	50
Nonresident Moose	175	300
Nonresident Mountain Goat	175	300
Nonresident Grizzly Bear	175	300

Amending 87-2-301, 87-2-304, 87-2-501, 87-2-505, 87-2-507, 87-2-508, 87-2-601, and 87-2-701
Third Reading Votes: House 91-9; Senate 47-2

SB 336 Daniels Revises the aerial hunting laws to, among other things, require that permits specify the species of animal and area to be hunted over, place restrictions on nonresident aerial hunting, and increase the maximum penalty for violations of aerial hunting laws.

Amending 81-7-501, 81-7-503, 81-7-505, and 81-7-511
Third Reading Votes: Senate 47-2; House 84-3

HB 342 Ellison Repeals the requirement that marten pelts be tagged by trappers.

Repealing 87-3-502
Third Reading Votes: House 88-2; Senate 47-1

SB 387 Mohar Authorizes the catching of whitefish from the Kootenai River by nets and traps for purposes of sale and requires the DFWP to adopt rules governing this practice.

Amending 87-3-204 and 87-4-601
Third Reading Votes: Senate 43-7; House 81-6

HB 402 Eudaily Lowers from 65 to 62 the age at which disabled persons qualify for half-price deer and elk tags. This act provides that qualifying disabled persons will also be eligible for half-price deer and elk licenses. Responsibility for determining when a disabled person will be allowed to hunt is transferred from medical doctors to the DFWP. Those disabilities which will be allowed are to be stated by rule. Further, this act establishes that youth from 12 to 14 years of age must purchase a Conservation License only to fish and hunt upland and migratory game birds. Other hunting licenses purchased by these youth will now cost one-half the regular price instead of $2.

Amending 87-2-801, 87-2-803, and 87-2-805
Third Reading Votes: House 93-6; Senate 48-0

HB 425 J. Jensen Provides that the Fish and Game Commission may authorize the Director of DFWP to open or close special seasons upon 12 hours notice to the public. Amending 87-1-304

Third Reading Votes: House 78-11; Senate 49-0

HB 434 C. Smith Authorizes the DFWP to adopt rules to establish classifications for licensing agents, circumstances under which licensing agents can post security other than surety bonds, and a procedure providing flexibility for licensing agents to make remittance to the state.

Amending 87-2-902 and 87-2-903
Third Reading Votes: House 84-2; Senate 47-0

SB 448 Lane Provides for stricter state scrutiny of game animal farms, game bird farms, and fur farms. The act requires that the DFWP adopt rules for this purpose.

Repealing 87-4-401 through 87-4-405
Third Reading Votes: Senate 48-0; House 75-19

HB 541 Phillips Generally revises the laws concerning the issuance and termination date of fish and game licenses. Specifically, this bill allows the DFWP to issue fish and game licenses by mail and changes the termination date of fishing and hunting licenses and conservation licenses from April 30 to the last day of February.

Amending 87-2-102, 87-2-104, 87-2-106, 87-2-111, and 87-2-202
Third Reading Votes: House 85-1; Senate 47-1

HB 567 Bertelsen Prohibits persons from destroying or disturbing other persons' traps, or removing wildlife from traps belonging to others. Owners or lessees of land where snares are located may, however, remove such traps at certain times when they pose a threat to livestock.

Third Reading Votes: House 86-0; Senate 47-3

HB 836 J. Jensen Defines the mourning dove as a migratory game bird and provides for a dove hunting season that shall coincide with the season for upland game birds.

Amending 87-2-101
Third Reading Votes: House 56-43; Senate 25-23

Killed:

HB 34 Ellison Requiring a hunter to obtain permission before hunting any kind of wildlife on private property. Present law requires permission only for big game hunting.

Amending 87-3-304
Died in House Fish and Game Committee

SB 47 Jacobson Reducing the qualifying age for resident senior citizen deer and elk tags from 65 to 62 years of age.

Amending 87-2-801
Died in House Fish and Game Committee

SB 344 Lynch Providing separate license fees for migratory and upland game bird hunting. The DFWP would also have been authorized to procure and sell fish and wildlife artwork at a profit, the proceeds to have gone to habitat improvement.

Amending 18-4-202, 18-4-203, 18-4-401, and 18-4-402
Adverse Senate Fish and Game Committee Report Adopted

HB 345 Spaeth Providing for the sale or donation of animal carcasses regardless of how acquired by the DFWP. Up to $30,000 from the sale of carcasses would have been used for establishing a statewide reward system to encourage reporting of violations of statutes administered by the DFWP.

Amending 87-1-511 through 87-1-513 and 87-1-226
Died in Senate Fish and Game Committee

HB 366 Iverson Requiring at least one member of the Fish and Game Commission to be a licensed outfitter beginning October 1, 1983.

Amending 2-15-3402
Died in House Fish and Game Committee

SB 383 Etchart Allowing a person 62 years of age or older with cataracts of the eyes or rheumatism of the hands or arms to receive certification for a game license that allows another licensed hunter to kill game for the disabled person.

Died in House Fish and Game Committee

HB 719 Devlin Eliminating the nonresident big game combination license, and requiring nonresidents to purchase individual licenses for specific big game. This bill would have established a nonresident elk license costing $250 and limiting the number that could be issued in the state for any single year to 17,000. Area restrictions on nonresident deer licenses would have been removed, but the most that could have been issued for the state in any year was 20,000.

Amending 87-2-504 and 87-2-506; Repealing 87-2-505
Died in House Fish and Game Committee

Other

Passed:

HB 94 Ellison Authorizes the DFWP to issue permits for the taking and holding of raptors (birds of prey) for captive breeding purposes even though the possessor does not hold a falconry license. The department is also authorized to establish rules and fees for implementing this act.

Amending 87-5-204 and 87-5-206
Third Reading Votes: House 96-0; Senate 47-1

SB 224 Tveit Designates the grizzly bear as the official animal of the state of Montana.

Third Reading Votes: Senate 42-4; House 88-5

HB 377 Fabrega Provides a new source of funding for nongame wildlife programs by creating a voluntary tax contribution checkoff on the individual income tax form for taxpayers receiving a refund. These funds are to be used for research and education programs and for management of nongame wildlife species designated by the DFWP, subject to legislative approval, as being in need of management. No money can be used for purchase of real property or in such a way as to interfere with the management of private property. The Fish and Game Commission must also approve any use of this money. This act also contains a termination clause and requires the department to submit a report to the 50th Legislature describing the program's accomplishments.

Amending 87-5-102

Third Reading Votes: House 85-12; Senate 48-0

HB 764 Nilson Allows for the possession and transportation of eagle parts and plumage for religious purposes by members of Indian tribes when permitted by federal law.

Amending 87-5-201

Third Reading Votes: House 96-3; Senate 48-0

Killed:

HB 4 Ryan Providing for state liability and compensation to individuals for damages to real and personal property caused by furbearing and game animals.

Died in House Fish and Game Committee

HB 291 Swift Authorizing commercial propagation of migratory birds and waterfowl under federal permits and defining the authority of the DFWP to restrict this practice if the director finds that the provisions of the federal permit are not in the best interests of the state's migratory bird or waterfowl resources.

Adverse Senate Fish and Game Committee Report Adopted

HB 515 R. Jensen Authorizing the DFWP to compensate property owners for damages caused by grizzly bears. Property owners would have become eligible for compensation upon entering into a management agreement with the department prescribing practices designed to prevent property damage by grizzly bears. The department would not have been liable for damages if a claimant had attempted to harm a grizzly bear or in any case, for damages less than $50.

Died in Senate Agriculture Committee

HB 564 Vinger Repealing an existing prohibition on marketing fowl or rabbits younger than a minimum statutory age by persons other than feed stores, hatcheries, or commercial breeders.

Repealing 81-8-401 and 81-8-402

Died in House Fish and Game Committee

HB 661 Ream Establishing a Nongame Wildlife Advisory Council with a primary responsibility of making recommendations to the DFWP on its nongame management programs and proposed rules.

Amending 87-5-102

Died in House Fish and Game Committee

HB 804 Bardanouve Changing the status of the grizzly bear in Montana from "rare" to "endangered" and prohibiting grizzly bear hunting unless the Fish and Game Commission determines that the presence of a grizzly bear constitutes a significant threat to the safety of humans. Penalties would have been provided for unlawful grizzly bear hunting.

Amending 87-2-101, 87-2-701, 87-3-102, 87-5-301, and 87-5-302

Died in House Fish and Game Committee

HB 891 Harper Requiring sampling and testing by DFWP of fish taken from Montana waters for the existence of substances toxic to human health.

Died in House Fish and Game Committee

Land Use

Annexation

Passed:

SB 332 **Marbut** Allows cities of all classes to annex land wholly surrounded by the city.

Amending 7-2-4501

Third Reading Votes: Senate 43-6; House 66-31

Killed:

SB 86 **Thomas** Reducing from 20 to 10 days the period for commenting on certain annexation resolutions.

Amending 7-2-4313, 7-2-4314, and 7-2-4405

Died in Senate Local Government Committee

HB 643 **J. Jensen** Providing special procedures for municipal annexation of contiguous "high density" land, which was defined as an area with at least four dwelling units per acre.

Died in Senate Local Government Committee

Eminent Domain

Passed:

SB 170 **Boylan** Provides that property taken by eminent domain and later abandoned reverts to the former owner unless the interest taken in the property was a fee simple.

Amending 70-30-321 and 70-30-322

Third Reading Votes: Senate 50-0; House 95-1

HB 265 **McBride** Eliminates some of the requirements for becoming condemnation commissioners and limits the compensation paid to these commissioners to $250 per day, including expenses. This act also requires that condemnors pay the commissioners' compensation.

Amending 70-30-207

Third Reading Votes: House 95-4; Senate 48-2

HB 825 **Jacobsen** Generally revises the eminent domain laws. Among other things, condemnors must now make a somewhat stronger showing of the public interest in taking the land than was formerly required.

Amending 70-30-104, 70-30-111, 70-30-201 through 203, 70-30-206, 70-30-207, 70-30-308, 70-30-309, 70-30-311, and 70-30-313; Repealing 70-30-204 and 70-30-205

Third Reading Votes: House 97-0; Senate 48-0

Farmland Preservation

Passed:

HJR 27 **Shontz** Urges the U.S. Congress to fully fund research for saline seep and other related projects by the Northern Plains Soil and Water Research Center located in Sidney, MT.

Third Reading Votes: House 98-1; Senate 44-5

HJR 35 Jacobsen Requests that an interim committee be assigned to study the classification, evaluation, assessment, and tax computation methods on agricultural lands.

Third Reading Votes: House 93-0; Senate 44-4

SB 316 Towe Creates a low-interest loan program for people wishing to enter the agricultural business. Specifically, this act creates a 9-member Agricultural Loan Authority empowered to purchase agricultural loans made by financial institutions. The act also provides that if a landowner sells more than 80 acres to a beginning farmer at 9% or lower interest, and this sale is approved by the authority, the seller is entitled to a reduction in taxable income in an amount equal to 100% of the capital gain. This tax credit cannot exceed $50,000.

Third Reading Votes: Senate 46-4; House 76-21

HB 486 Spaeth Establishes a Rangeland Improvement Loan Program to be administered by the DNRC and funded with 15% of available monies from the Renewable Resource Development Grant and Loan Program. Eligibility requirements for loans, criteria for evaluating loan applications, and rules for administering the program are to be established and a termination date of June 30, 1989 is set for the program.

Amending 76-14-103 and 90-2-113

Third Reading Votes: House 98-0; Senate 48-0

HB 851 Jacobsen Declares a moratorium until January 1, 1986, on the implementation of new rules proposed by the Department of Revenue changing the assessed valuation of agricultural lands. Current rules are to remain in effect until the legislature has an opportunity to review and assess any new rules.

Third Reading Votes: House 81-4; Senate 49-0

Killed:

HJR 34 Roush Requesting that an interim committee be assigned to study ownership and leasing of Montana farmland and ranchland, taxes paid by the owners, use of the land, and state laws benefitting different types of landowners.

Killed on House Second Reading

SB 296 Conover Prohibiting non-agricultural corporations from owning agricultural land in Montana, and requiring corporations presently owning agricultural land to sell those interests.

Amending 35-1-107, 35-1-108, 35-12-509

Died in Senate Agriculture Committee

SB 361 Turnage Revising the criteria under which land is classified as agricultural for tax purposes. Land would have been presumed to be in agricultural use unless: covenants prevented agricultural use; or it was used for a commercial or industrial site; or it consisted of parcels that when taken together were less than five acres.

Amending 15-7-202

Died in House Taxation Committee

Forest Land

Passed:

SJR 8 Severson Sends four delegates, two state senators and two state representatives, to the Western States Legislative Forestry Task Force.

Third Reading Votes: Senate 48-0; House 75-19

HJR 40 Stobie Requests that an interim committee be assigned to study the management practices of state lands and the resources thereon, particularly forest resources.

Third Reading Votes: House 90-3; Senate 46-4

SB 95 McCallum Reallocates that portion of the Federal Forest Reserve payment that is currently credited to county common school funds to specific school funds in the counties in which the national forests are located. These payments will no longer indirectly be used for statewide school equalization.

Amending 17-3-213, 20-9-331, 20-9-332, and 20-9-335

Third Reading Votes: Senate 41-6; House 58-42

HB 305 Harp Increases the maximum amount of timber that may be sold on short notice in cases of emergency, for instance when a threat of fire exists, from 200,000 to 1,000,000 boardfeet.

Amending 77-5-201

Third Reading Votes: House 96-1; Senate 50-0

HB 743 Curtiss Reduces from 10 to 5 the maximum number of coniferous trees that a person may transport without a bill of sale. The transport of more than 200 pounds of coniferous tree boughs will also require a bill of sale.

Amending 76-13-601

Third Reading Votes: House 89-7; Senate 47-0

Killed:

HB 239 Hemstad Requiring that money paid to the state by the U.S. Forest Service be paid directly to the counties in which the National Forests are located.

Amending 17-3-211

Adverse Senate Education Committee Report Adopted

HB 726 Curtiss Appropriating $240,000 from the Renewable Resource Development Clearance Fund Account to the DSL for timber stand improvement grants.

Died in House Appropriations Committee

HB 864 Connelly Making mandatory the presently authorized forest resources advisory functions of the DSL and appropriating money for that purpose.

Amending 76-13-104

Died in Senate Finance and Claims Committee

Parks and Recreation

See Also SB 233

Passed:

HB 56 Pavlovich Removes the termination date set for the applicability of class four property taxation for land and improvements owned by nonprofit Montana corporations and used for golfing purposes.

Repealing Sec. 2, Chapter 638, Laws of 1979

Third Reading Votes: House 80-18; Senate 49-0

HB 833 Manuel Appropriates money for capital projects for the 1984-85 biennium. Among other things, funding is provided for state park acquisition, monuments, game ranges, and recreational area improvements.

Third Reading Votes: House 81-13; Senate 47-3

Killed:

HB 54 Kitselman Appropriating money to the DFWP for the acquisition of Lake Elmo and approximately 100 acres adjacent to it near Billings for use as a state park.

Died in House Fish and Game Committee
Note: Funding for the purchase of this lake was successfully provided for in HB 833.

HB 101 Roush Eliminating the acquisition of parks as a permissible use of interest earnings from the Parks and Cultural Trust Fund.

Amending 15-35-108 and Repealing 23-1-108

Died in House Fish and Game Committee

HB 104 Winslow Requiring that allocations to the Parks and Cultural Trust Fund cease after the fund has reached $15 million.

Amending 15-35-108

Killed on House Second Reading

SB 219 Van Valkenburg Prohibiting county park boards from leasing county park lands for purposes that may impair the use or value of those lands as public parks.

Amending 7-16-2323

Adverse Senate Local Government Committee Report Adopted

SB 347 Galt Providing that a prescriptive easement may not be acquired through recreational uses.

Died in House Judiciary Committee

HB 385 Schultz Appropriating $35,000 from the general fund to the DOA for land acquisition and development at Fort McGinnis State Monument northeast of Lewistown.

Died in House Appropriations Committee

HB 824 Hand Appropriating $500,000 from the RIT interest account to the DOA for the development of Bannack State Park.

Died in House Appropriations Committee

Planning

See Also SB 112, SB 359

Killed:

SB 113 Thomas Providing that actions taken by planning boards are to be deemed official provided they are authorized by a majority of the members present.

Amending 76-1-304

Died in Senate Local Government Committee

HB 410 Addy Requiring the state to appropriate state highway funds to match federal funds available for metropolitan planning. These federal funds would have been available to cities with populations greater than 50,000.

Died in House Highways Committee

Public Lands

Passed:

HJR 12 Swift Expresses the legislature's opposition to the federal government's proposal to sell large blocks of public lands.

Third Reading Votes: House 89-10; Senate 29-18

SB 118 Towe Requires that a public hearing be held prior to the sale or transfer of federal lands. The Commissioner of State Lands must determine whether or not there would be any adverse impacts to state interests resulting from the sale of federal lands. Upon an affirmative determination, the Commissioner must conduct a public hearing. In addition, a representative from the DSL is required to attend all federal hearings on proposed sales of public land and the Commissioner is authorized to make formal requests and protests in regard to federal land transfers or sales.

Third Reading Votes: Senate 49-1; House 72-23

HB 122 Addy Authorizes the Board of Land Commissioners to set the primary term of oil and gas leases at not more than ten years or less than five years, unless the Board determines a shorter term is necessary to ensure full compensation for oil and gas resources. Previously, the primary term of state oil leases was fixed at ten years.

Amending 77-3-421

Third Reading Votes: House 96-0; Senate 49-0

HB 154 Spaeth Addresses a problem that sometimes arises when a lease of state land is transferred from one lessee to another. Under present law an improvement placed on the land is often purchased by the new lessee at a disputed price. While an arbitration procedure existed, it required the lessees to agree on an arbitrator. This act authorizes the Commissioner of State Lands to appoint an arbitrator should the lessees fail to do so. Further, either party is allowed the opportunity to petition the district court for judicial review of the DSL's final decision.

Amending 77-6-306

Third Reading Votes: House 94-1; Senate 46-1

HB 155 Spaeth Establishes an arbitration procedure for disputes between lessees of state lands and parties receiving rights-of-way easements across leasehold estates. The parties may also petition the district court for judicial review of this procedure.

Amending 77-2-107

Third Reading Votes: House 93-1; Senate 47-1

HB 255 Wallin Requires that state lands proposed for purchase, exchange, or sale be appraised by a qualified land appraiser.

Amending 77-1-202, 77-1-203, 77-2-211, and 77-2-323

Third Reading Votes: House 84-6; Senate 50-0

HB 391 Stobie Directs the Board of Land Commissioners, in the adoption of new rules establishing the value of cabin site licenses or leases on state lands, to utilize a method which does not cause undue disruption to current licensees and lessees. Licensees and lessees may assign their property right to another person at the existing rate while new cabin site licenses and leases will be valued according to a competitive bidding procedure.

Third Reading Votes: House 85-0; Senate 47-0

HB 432 Devlin Prohibits the DSL from removing preference rights of lessees of state lands for violating terms of a lease. Penalties will now be limited to fines or lease cancellation.

Amending 77-6-205

Third Reading Votes: House 95-1; Senate 49-0

HB 815 Fabrega Requires the DOC to identify railroad rights-of-way scheduled for abandonment that may have potential for local transportation service. The department is authorized to determine the feasibility of and negotiate for the acquisition of abandoned railroad rights-of-way for local government transportation authorities. Rights-of-way may not be retained by an agency of state government.

Third Reading Votes: House 89-11; Senate 37-11

Killed:

SB 191 Blaylock Freezing the minimum base rental rate for state-owned grazing lands. A study would have been conducted to determine what the appropriate rental rate should be.

Amending 77-6-507

Died in Senate Agriculture Committee

SB 192 Blaylock Providing that the minimum crop share rental for agricultural leases on state land may be no less than 30% of the annual crop.

Amending 77-6-501

Died in Senate Agriculture Committee

SB 341 Eck Reimbursing local governments for major expenses incurred in providing fire protection and law enforcement services on state property.

Adverse Senate State Administration Committee Report Adopted

Special Districts: Conservation

Passed:

HB 349 Spaeth Establishes a Conservation Practice Loan Program and clarifies existing law pertaining to conservation districts. The loan program is designed to finance landowners' conservation practices as approved by the Board of Supervisors of a conservation district.

Amending 76-15-301, 76-15-311, 76-15-313, 76-15-319, 76-15-501, 76-15-502, 76-15-512, 76-15-515 through 76-15-517, 76-15-523, 76-15-524, 76-15-527, and 76-15-804

Third Reading Votes: House 85-0; Senate 48-2

HB 509 Asay Allows all conservation districts to be reorganized into seven supervisor areas, each area with its own elected supervisor on the Board of Supervisors. Previously, conservation districts without incorporated municipalities were authorized to have no more than five supervisor areas.

Amending 76-15-311

Third Reading Votes: House 93-1; Senate 49-0

Killed:

SB 396 Marbut Providing for conservation easements for riparian habitat in certain instances and exempting such easements from review by local planning authorities.

Amending 76-6-102, 76-6-104, 76-6-203, 76-6-206, and 87-2-305

Died in Senate Natural Resources Committee

Special Districts: Irrigation

Passed:

SB 276 Aklestad Provides that the Board of Commissioners of irrigation districts may, by resolution, establish that district votes are to be cast by 1-acre rather than 40-acre blocks.

Amending 85-7-1710

Third Reading Votes: Senate 46-0; House 83-4

SB 277 Conover Authorizes the Board of Commissioners of irrigation districts to refuse delivery of water to any person who has unsatisfied financial obligations to the district. Previously, a person was required to be two years delinquent before such action was permitted.

Amending 85-7-1902

Third Reading Votes: Senate 44-2; House 79-7

SB 278 Conover Increases from $125,000 to $150,000 the maximum financial obligation that a board of commissioners may bind an irrigation district to without obtaining membership approval.

Amending 85-7-1904

Third Reading Votes: Senate 38-8; House 86-6

SB 280 Fuller Provides that an irrigation district may contract with the federal government only upon approval of a majority of its members representing at least 50% of the acreage in the district.

Amending 85-7-1956

Third Reading Votes: Senate 45-0; House 92-1

SB 294 Hazelbaker Eliminates the minimum administrative charge assessed against tracts of land less than one acre in size that are unable to receive water from irrigation districts. Also, irrigation districts will now be able to levy assessments to comply with contracts with the State of Montana to cover the construction costs of new gravity irrigation systems for irrigation of state lands.

Amending 85-7-2103 and 85-7-2104

Third Reading Votes: Senate 47-0; House 91-2

HB 662 Schye Clarifies that irrigation districts may engage in electrical power production.

Amending 85-7-1961

Third Reading Votes: House 91-4; Senate 35-12

Killed:

HB 254 Ernst Repealing the DOA's authority to conduct audits of irrigation districts, conservancy districts, and rural fire districts. This bill would have moved responsibility for the financial audit and bookkeeping of these districts to county commissioners.

Amending 2-7-503, 2-7-514, 7-33-2105, 85-7-1616, 85-7-1913, and 85-7-2027; Repealing 85-9-611

Died in House Local Government Committee

HB 409 Veleber Exempting from irrigation district tax assessment tracts of land less than one acre in size and unable to receive water. In order to be granted assessment relief, the landowner would have had to file an affidavit attesting to the tract's inability to receive water.

Amending 85-7-2103 and 85-7-2104

Died in House Agriculture Committee

Subdivisions

See Also SB 233, SB 406

Passed:

HJR 20 Marks Requests the DHES to review and revise rules adopted under the Montana Sanitation in Subdivisions Act in order to minimize the costs of subdivision review.

Third Reading Votes: House 77-21; Senate 49-0

SB 87 Thomas Allows a local government to increase from one year to three the initial period of approval for preliminary plats of proposed subdivisions.

Amending 76-3-610

Third Reading Votes: Senate 49-0; House 97-1

HB 95 Donaldson Appropriates $58,000 to the DHES for sanitary review of subdivisions for the biennium ending June 30, 1983.

Third Reading Votes: House 92-7; Senate 46-2

HB 118 Harper Increases the per lot fee chargeable for subdivision review from $30 to $48. Also, a loan for up to $50,000 from the general fund is authorized until sufficient fees have been received to fully fund this program.

Amending 76-4-105

Third Reading Votes: House 66-31; Senate 44-5

Killed:

SB 71 Goodover Providing that divisions of land completed prior to July 1, 1973 are not subdivisions within the purview of the Subdivision and Platting Act except as regards surveying requirements.

Amending 76-3-207

Died in Senate Local Government Committee

SB 140 Story Granting local governing bodies the authority to conduct sanitary reviews of proposed subdivisions under the Sanitation in Subdivisions Act. A local governing body, if certified by DHES as being competent to review subdivisions, could have supplanted the department's review.

Amending 75-6-112, 76-4-102, 76-4-104 through 76-4-108, 76-4-121 through 76-4-125, 76-4-127, 76-4-129, and 76-3-130

Died in House Natural Resources Committee

SB 176 Marbut Requiring that certificates of survey include diagrams of all easements and rights-of-way of record existing at the time the certificates are filed.

Amending 76-3-404

Adverse Senate Local Government Committee Report Adopted

HB 588 Swift Clarifying that county roads created for subdivisions and dedicated to the public shall remain in public ownership even upon abandonment unless an order to abandon specifically divests the public of its title.

Amending 7-14-2107 and 7-14-2615

Died in Senate Judiciary Committee

HB 613 Lory Requiring deposit of subdivision fees in the state general fund and providing that funding for subdivision review be derived from the state general fund. Also, a ceiling of $30 per lot would have been placed on subdivision fees. Reimbursement of costs to local governments for subdivision review would have been provided for as well.

Amending 76-4-105, 76-4-1108, and 76-4-1212
Killed on Senate Second Reading

HB 645 Sales Requiring that property taxes be paid in full before a parcel of land may be divided.

Amending 76-3-207 and 76-3-303

Adverse Senate Taxation Committee Report Adopted

HB 646 Lory Authorizing local governing bodies to adopt regulations that define "subdivision" more inclusively than the state has done in the Subdivision and Platting Act and allowing local entities to restrict or eliminate the use of exemptions under that act.

Amending 76-3-103, 76-3-104, 76-3-201, 76-3-207, and 76-3-504

Adverse Senate Agriculture Committee Report Adopted

HB 762 Lory Generally revising Montana subdivision and local planning laws. Among the many significant changes this bill sought were: requirements that local land use plans set forth community policy regarding quality and location of urban development, including descriptions of present and future housing densities and types of existing and potential public service facilities provided; and tighter definitions of "occasional sales," "minor subdivisions," "common boundary relocations," and "subdivision"; deletion of exemptions for "court ordered divisions," "reservations of life estates," and "use for agricultural purposes."

Amending 76-1-606, 76-3-103, 76-3-104, 76-3-201, 76-3-207, 76-3-504, 76-3-505, 76-3-601, 76-3-604, 76-3-605, 76-3-609, and 76-4-125; Repealing 76-3-210

Adverse Senate Agriculture Committee Report Adopted

HB 770 Hansen Restricting the exemption for certain condominiums from compliance with the Montana Subdivision and Platting Act, and requiring state sanitation review for all condominiums under the Sanitation in Subdivisions Act. Conversions of existing structures that do not comply with local zoning ordinances would have been subject to local review under the Subdivision and Platting Act, and future transfers of condominium units would not have been permitted unless water and sewer facilities received approval by the state.

Amending 76-3-203, 76-3-301, 76-4-111, and 76-4-122

Died in Conference Committee

HB 830 Hansen Allowing local governments to charge an additional fee for review of minor subdivisions.

Amending 76-4-128

Adverse Senate Local Government Committee Report Adopted

Zoning

Passed:

HB 830 Donaldson Authorizes political subdivisions of the state to adopt land use regulations for the management of floodplains within unregulated sheet flood areas. Applicable areas must be designated by the Federal Emergency Management Agency.

Amending 76-5-301

Third Reading Votes: House 96-2; Senate 47-1

Killed:

SB 112 Thomas Requiring a county planning board serving as a zoning commission to give notice of and conduct a public hearing on adoption or amendment of zoning regulations. Also, the protest period for proposed zoning regulations would have been reduced from 30 to 14 days and the time limit for formal action on proposed zoning regulations by a board of county commissioners similarly reduced.

Amending 76-2-205

Died in Senate Local Government Committee

HB 240 Hansen Increasing from 40% to 60% the percentage of freeholders necessary to overrule a board of county commissioner's resolution to create a zoning district.

Amending 76-2-205

Died in House Local Government Committee

HB 538 Sands Reducing the number of votes necessary to make a change in local zoning regulations from 75% to 60% of the members of a legislative body of cities or towns.

Amending 76-2-305

Killed on House Second Reading

Other

Killed:

SB 85 Thomas Changing the notice period required for public hearings on urban renewal plans from not less than 10 nor more than 30 days to not less than five nor more than 15 days.

Amending 7-15-4215

Died in Senate Local Government Committee

SB 124 McCallum Authorizing boards of county commissioners to amend the described limits of proposed cities and towns seeking incorporation when such an amendment is consistent with existing statutes and in the best interest of the county.

Amending 7-2-4101

Died in Senate Local Government Committee

HB 598 Kadas Providing boards of county commissioners, after notice and a hearing, with the authority to determine the number and term of office for members on appointed boards and commissions.

Amending 7-16-2203, 7-16-2302 through 7-16-2304, 7-21-3401, 7-21-3402, 7-22-2103, 7-22-2104, 7-22-2411, 7-22-2412, 7-35-2108, 22-1-308, 50-2-104, 76-1-211, 76-2-101, 76-2-102, 76-2-220, and 76-2-222

Adverse Senate Local Government Committee Report Adopted

Mineral and Petroleum Development

Exploration, Operation and Reclamation

Passed:

SB 87 Keating Modifies a limitation on the authority of the Board of Land Commissioners for the issuance of coal leases to foreign interests by allowing the Board to issue such leases when the country of residence of the foreign interest provides similar privileges to citizens of the United States.

Amending 77-3-305

Third Reading Votes: Senate 48-0; House 86-12

SB 148 Himsl Reestablishes the Board of Oil and Gas Conservation and reschedules it for sunset review in 1989. Collection of the Oil and Gas Producers Privilege Tax is transferred to the Department of Revenue, and the penalty for late payment of this tax is increased from 10% to 25% of the amount owed. The Board's power to require implementation of measures to prevent contamination and damage to surrounding land was also expanded. Changes in the rates of the producers privilege tax must now be made according to the Montana Administrative Procedure Act.

Amending 2-8-103, 15-36-107, 82-11-111, and 82-11-131 through 82-11-133

Third Reading Votes: Senate 47-1; House 91-8

HB 214 Howe Authorizes the DSL to require a single annual report from mining operations that possess multiple permits under the Montana Strip and Underground Mine Reclamation Act.

Amending 82-4-237

Third Reading Votes: House 92-0; Senate 48-0

HB 225 Asay Grants the Division of Workers' Compensation the authority to employ additional qualified coal mine inspectors.

Amending 50-73-401

Third Reading Votes: House 99-0; Senate 47-0

HB 287 Harper Provides that the reclamation bond required under the Opencut Mining Act may be greater than $1000 per acre if the DSL determines that the cost of restoring disturbed land exceeds that amount.

Amending 82-4-433

Third Reading Votes: House 92-7; Senate 48-0

SB 350 Tveit Requires the Board of Oil and Gas Conservation to adopt rules requiring identification of geophysical exploration crews operating in Montana and designate areas where geophysical activities are not permitted.

Amending 82-1-101 and 82-1-104

Third Reading Votes: Senate 47-1; House 97-0

SB 369 Graham Repeals the prohibition on the issuance of additional strip and underground mining permits to operators who have repeatedly violated state reclamation laws.

Amending 82-4-251

Third Reading Votes: Senate 50-0; House 96-2

HB 438 Harp Revises the confidentiality requirement placed on reports of stratigraphic test wells filed with the Board of Oil and Gas Conservation. Operators will not have to provide sample cuttings and chips to the board until three years after drilling, at which time they become public information. Prior to passage of this act, this information was required to be provided to the board within six months and was then withheld from public view for three years.

Amending 82-11-125

Third Reading Votes: House 85-10; Senate 48-0

HB 815 Holliday Allows the DSL to waive civil penalties for minor violations of the Montana Strip and Underground Mine Reclamation Act when such violations do not pose potential harm to public health, public safety, or the environment. The Board of Land Commissioners is required to adopt rules for issuance of such waivers.

Amending 82-4-254

Third Reading Votes: House 83-1; Senate 49-0

Killed:

SB 164 Shaw Requiring that lessors of undeveloped land pay their lessees money received for the right to conduct geophysical exploration on the property subject to the lease. Sums received for damage to the leasehold interest by geophysical exploration would also have been payable to the lessee.

Amending 82-1-109 and 82-1-110

Adverse Senate Natural Resources Committee Report Adopted

SB 416 Ochsner Amending the definition of "preparatory work" in the Strip and Underground Mine Siting Act to include the construction of new railroad tracks between proposed mines and an existing railroad.

Amending 82-4-103

Adverse Senate Natural Resources Committee Report Adopted

SB 442 Tveit Requiring that oil and gas produced from wells within the state be measured and reported before a change of possession or control occurs. Penalties for potential violations were included.

Amending 45-2-311

Adverse Senate Natural Resources Committee Report Adopted

HB 842 J. Jensen Generally revising the Metal Mine Reclamation Act by clarifying the purpose of reclamation, requiring immediate notice of emergencies to the DSL and requiring reclamation of disturbed land to the same or comparable condition as existed before mining. A new section would have been added to the act

allowing groundwater users to seek damages from mine owners for loss or degradation of wells caused by mining operations.

Amending 82-4-302, 82-4-303, 82-4-336, 82-4-338, and 82-4-341

Died in House Natural Resources Committee

HB 921 Keenan Requiring the governor's office to conduct an inquiry into the legal responsibilities for reclamation of lands affected by mining and smelting in the Butte-Anaconda area and to examine the socioeconomic impacts of the closure of these operations. The purpose would have been to identify possible legal remedies available to the state and local governments for mitigating those impacts.

Died in House Appropriations Committee

Local Impact Mitigation: Coal Mining

Passed:

HB 105 Winslow Allocates 10% of the interest earnings from the Local Impact and Education Trust Fund to postsecondary vocational-technical centers and adult basic education programs.

Amending 90-6-211

Third Reading Votes: House 72-25; Senate 42-5

SB 186 Elliott Authorizes the Coal Board to award loans as well as grants from the Local Impact and Education Trust account. This act also authorizes loans and grants to be awarded to federally recognized Indian tribes provided they agree to waive their immunity in the event of disputes arising from the transaction. Adjudication of such disputes will take place in the First Judicial District Court of Montana.

Amending 90-6-205, 90-6-206, 90-6-208, and 90-6-209

Third Reading Votes: Senate 44-2; House 94-5

SB 245 D. Manning Extends the deadline for expenditure of funds appropriated to the DOH before June 30, 1979 from the Coal Area Highways Improvement Account until June 30, 1985.

Third Reading Votes: Senate 48-0; House 96-0

HB 520 Roush Clarifies the designation process used for determining which local governments and school districts are eligible for coal board impact grants.

Amending 90-6-207

Third Reading Votes: House 100-0; Senate 48-0

HB 556 Asay Allows the Coal Board to make grants to qualified applicants for the purpose of paying part or all of an applicant's credit obligation for prepaid property taxes.

Third Reading Votes: House 60-39; Senate 46-1

Killed:

HB 109 Winslow Separating the Local Impact and Education Trust Fund into two accounts.

Amending 15-35-108, 20-9-343, 90-1-108, 90-6-202, 90-6-205, 90-6-207, and 90-6-211

Killed on House Second Reading

SB 202 Towe Establishing a method of determining coal development impact costs incurred by local government units and fixing the maximum appropriation available for such costs from the coal trust income earnings. The method included a formula based on coal area employment and per capita costs for governmental services.

Adverse Senate Taxation Committee Report Adopted

Local Impact Mitigation: Hard-rock Mining

See Also HB 724

Passed:

SJR 22 Conover Requests the federal government and the DOH to cooperate with Stillwater County in funding repairs to Montana Secondary Highway No. 419 needed as a result of transportation of chromium ore for the U.S. strategic mineral stockpile.

Third Reading Votes: Senate 38-10; House 95-1

SB 227 Towe Allocates revenues from the MMLT for the purpose of operating the Hard Rock Mining Impact Board. This act was self-repealing upon passage of HB 446.

Amending 15-1-501 and 90-6-304

Third Reading Votes: Senate 49-0; House 90-2

HB 446 D. Brown Amends the MMLT such that the first $250,000 of mineral production is exempt from the tax. It also modifies, slightly, the rates of taxation for production greater than $250,000, and creates a Hard Rock Mining Trust Account which, starting in Tax Year 1985, will receive one-third of revenues collected under the MMLT. Funds in this account will be administered by the Hard Rock Mining Impact Board to be distributed to communities that experience socioeconomic impacts as a result of mining slowdowns or shutdowns.

Amending 15-1-501, 15-37-101, 15-37-103, and 90-6-303 through 90-6-306

Third Reading Votes: House 88-9; Senate 42-6

HB 472 D. Brown Generally revises the Hard Rock Mining Impact Act. This act modifies the mechanics of the Impact Act, which was designed to assist local governments in dealing with growth effects associated with the development of large mining operations. The most significant change is the inclusion of a provision that enables either a mineral developer or a local government to petition for modifications in Mining Impact Plans.

Amending 82-4-335, 90-6-305, 90-6-307, and 90-6-309

Third Reading Votes: House 83-2; Senate 49-0

HB 870 Fabrega Creates a mechanism for sharing the property tax base increase that results from the development of new large-scale hard rock mineral operations among those municipalities, counties, and school districts that experience increased demands for government services.

Third Reading Votes: House 96-0; Senate 48-0

Killed:

HB 31 Harrington Creating a Metal Mines Board to administer grants to local government units out of revenues from the MMLT in order to lessen economic hardships resulting from metal mining. This bill would have earmarked 25% of the revenue from the tax for this purpose.

Died in House Taxation Committee

SB 379 Lynch Imposing a mining impact tax on any mining company with a work force of at least 700 employees that reduces that work force by one-half during a nine-month period. The tax would have been payable three months after the workforce had been reduced, with the tax equal to the impact costs incurred by the local governments as determined by the Department of Commerce. Failure to pay this tax would have resulted in a lien against the real and personal property of the mineral developer.

Killed on Senate Second Reading

HB 640 Harrington Appropriating $300,000 of the revenue collected through the MMLT directly to the local governments of Butte-Silver Bow and Anaconda-Deer Lodge. This money would have been used for mitigating the socioeconomic impacts of the Anaconda Co. shutdown.

Died in Senate Finance and Claims Committee

HB 903 Fagg Appropriating $100,000 from the Federal Abandoned Mines Reclamation Account to the DSL to rectify environmental damages caused by mining in the Stillwater-Boulder River complex.

Died in Senate Finance and Claims Committee

Taxation and Royalties

Coal Severance

See Also HB 101, HB 104, SB 359, and HB 885

Passed:

HB 1 Vincent Allocates $3,525,000 of the interest from the coal severance tax trust fund to the Montana Economic Development Fund to be appropriated to 11 programs designed to enhance the development of the Montana economy.

Third Reading Votes: House 95-4; Senate 48-0

HB 100 Kemmis Creates the Montana In-State Investment Fund that is to consist of 25% of the revenue deposited after June 30, 1983 in the coal severance trust fund. The Montana Economic Development Board is also created, and given power to make investments benefitting the Montana economy. Preferences will be given to investments in businesses that are locally owned, provide jobs to Montanans, pay the prevailing wage, are small to medium-sized, maintain and improve a clean and healthful environment with emphasis on energy efficiency, and promote Montana's agricultural products.

Amending 17-6-201 and 17-6-211

Third Reading Votes: House 80-19; Senate 42-8

HB 103 Winslow Makes the Coal Tax Oversight Committee a permanent subcommittee of the Revenue Oversight Committee.

Third Reading Votes: House 88-6; Senate 50-0

HB 110 Winslow Establishes a Cultural and Aesthetic Projects Advisory Committee to submit recommendations to the legislature on cultural and aesthetic grant proposals funded by the coal severance tax.

Amending 22-3-112

Third Reading Votes: House 88-9; Senate 48-1

SB 185 Galt Increases from 20,000 to 50,000 tons per year the maximum quantity of coal that can be produced and remain eligible for severance and gross proceeds tax exemptions. Coal production of less than 50,000 tons per year will be exempt from the coal severance tax, but the value of production of more than 20,000 tons will be used to compute the tax if more than 50,000 tons is produced. Also, coal producers will be exempt from the gross

proceeds tax on one-half the contract sales price of coal if less than 50,000 tons is produced.

Amending 15-6-208 and 15-35-103

Third Reading Votes: Senate 49-0; House 82-4

SB 264 Graham Allows the Department of Revenue to compute a value for coal if a mine operator subjects it to processing that improves its quality.

Amending 15-35-107

Third Reading Votes: Senate 46-3; House 87-7

HB 706 Asay Excludes a portion of the mineral royalties paid to the federal government, state government, or recognized Indian tribes from the coal severance tax. This royalty exclusion will be phased until July 1, 1987, when only 15% per ton worth of these royalty payments will be subject to coal severance taxation.

Amending 15-35-102

Third Reading Votes: House 92-7; Senate 45-4

HB 730 Shontz Directs the DOH to develop a program for the reconstruction of the state's highways, and creates a 10-year Highway Reconstruction Trust Account to fund this program. Deposited into this account will be the revenues from the Gasoline License Tax, Diesel Fuel and Volatile Liquids Tax, 37½% of the oil and gas royalties the state receives from the federal government, 6% of total coal severance tax revenues in Fiscal Year 1987, and 12% of total coal severance tax revenues for succeeding fiscal years through 1993. The DOH is instructed to spend these funds according to need. Money from this fund cannot be used for routine repairs.

Amending 15-35-108 and 17-3-201

Third Reading Votes: House 82-3; Senate 50-0

Killed:

HB 11 Pistoria Allocating $10 million each year from coal severance tax collections for the construction of primary and secondary roads. The percentage of the coal severance tax allocated to the constitutional trust fund would have remained the same but all other allocations would have decreased proportionally.

Amending 15-35-108

Died in House Taxation Committee

SB 96 Elliott Eliminating the coal severance tax income subfund and earmarked allocations from it, and providing for deposit of 85% of the interest and earnings from the Coal Severance Tax Trust Fund directly into the state general fund.

Amending 17-5-703 and 17-5-704

Died in House Taxation Committee

SB 97 Elliott Eliminating earmarking of coal severance tax revenues to the Alternative Energy Research Development and Demonstration account and the County Planning account beginning July 1, 1985. Thereafter those revenues would have been deposited in the general fund.

Amending 15-35-108 and 90-4-103

Adverse Senate Taxation Committee Report Adopted

SB 365 Goodover Increasing the allocation of coal severance tax money to the general fund by eliminating allocations to the Alternative Energy Research and Coal Area Highway Improvement accounts. Grants from the Coal Board for local impact mitigation would also have been limited to $1 million during any biennium unless awarded in association with a new major facility.

Amending 15-38-108, 90-6-202, and 90-6-205; Repealing 90-4-101 through 90-4-108 and 90-6-210

Died in Senate Taxation Committee

SB 434 Towe Allocating 15% of coal severance tax revenues for the reconstruction of highways.

Amending 15-35-108

Died in Senate Taxation Committee

HB 442 Seifert Appropriating money from the Coal Severance Tax Trust Fund for the reconstruction, maintenance and repair of highways, streets and roads.

Killed on House Second Reading Note: This bill required a 3/4 vote in each house for approval as it was a constitutional amendment.

HB 443 Seifert Seeking to amend the Montana Constitution to reduce the amount of coal severance tax revenue to be allocated to the Coal Severance Tax Trust Fund from 50% to 30% and requiring that 20% of the coal tax revenue and interest be used for highway construction.

Killed on House Second Reading

HB 918 Ellerd Appropriating money from the Coal Severance Tax Fund for the purpose of financing prison expansion.

Died in House Appropriations Committee

Federal Payments

See Also HB 730

Killed:

HB 237 Devlin Redistributing monies received by the state under the federal Mineral Lands Leasing Act. Currently, 37½% of this money goes to the statewide highway account and 62½% to the statewide school equalization fund. This bill would have decreased those percentages to 15% and 25% respectively and established two new allocations to the counties in which the money was generated.

Amending 17-3-201 and 20-9-343

Died in House Appropriations Committee

HB 413 Bardanouve Redistributing monies received by the state under the federal Mineral Lands Leasing Act currently allocated for education. This bill would have allocated that portion of this royalty payment now deposited in the statewide equalization fund to the common school funds of the counties in which the minerals were extracted. The money would have been distributed according to the amounts collected in each county.

Amending 17-3-201, 20-9-331, 20-9-333, and 20-9-343

Died in House Appropriations Committee

Metalliferous Mines License Tax

See Also HB 31, SB 227, HB 446, and HB 640

Passed:

SB 108 B. Brown Requires a quarterly report of the market value of merchantable metals or gems extracted in the state for purposes of determining revenues payable under the MMLT, and requires the yearly payment of the tax to accompany the March 1 report. The penalty provisions for late payment of this tax are also revised.

Amending 15-37-102, 15-37-104 through 15-37-106, and 15-37-108

Third Reading Votes: Senate 43-6; House 92-6

Killed:

SB 299 Towe Revising the rates of the MMLT exactly as done in HB 446 except adding a surcharge for increases in the base price of metals. One-third of the revenues collected under this tax would have been deposited into a Hard-Rock Mining Impact Account.

Amending 15-1-501, 15-37-103, and 90-6-304 through 90-6-306

Died in Senate Taxation Committee

HB 380 Switzer Repealing the MMLT.

Amending 15-1-501 and Repealing 15-37-101 through 15-37-112

Died in House Taxation Committee

Net and Gross Proceeds Taxes

See Also HB 333, SB 437, and SB 462

Passed:

SB 110 Towe Provides for the assessment of interest on late payments of net proceeds and gross proceeds taxes at the rate of 1% per month until paid in full. Taxpayers already paying interest on general property taxes are not subject to this penalty.

Third Reading Votes: Senate 50-0; House 96-3

SB 342 Gage Changes the deadline from March 31 to April 15 for filing reports on oil and gas pipelines and statements of sales for oil and gas operations. These reports and statements are used for computing oil and gas net proceeds taxes.

Amending 15-23-103, 15-23-104, and 15-23-602

Third Reading Votes: Senate 50-0; House 95-1

SB 413 Gage Limits to 70% the amount of federal excise tax paid by oil and gas producers that may be deducted when computing the state's net proceeds tax. This act eliminates the need for a reassessment of net proceeds taxes after oil and gas producers receive refunds from overpayment of windfall profits taxes.

Amending 15-23-603 and 15-23-605

Third Reading Votes: Senate 47-0; House 93-3

HB 582 Switzer Provides for additional deductions from the net proceeds tax on non-coal and non-metal mines. The new allowable deductions include additional kinds of insurance premiums, welfare and retirement payments for employees, testing costs in compliance with federal and state health and safety laws, assaying and sampling costs, and plant security costs.

Amending 15-23-502 and 15-23-503

Third Reading Votes: House 84-4; Senate 50-0

Killed:

SB 231 Keating Reducing the taxable portion of net proceeds from oil and gas development from 100% to 70%.

Amending 15-6-131

Adverse Senate Taxation Committee Report Adopted

HB 717 Mueller Reducing the taxable portion of net proceeds from mineral development from 100% to 80%, except for petroleum and natural gas.

Amending 15-6-131

Killed on House Second Reading

Oil and Gas Severance Taxes

Passed:

SB 159 Keating Reduces the oil severance tax rate from 6% to 5% beginning April 1, 1985.

Amending 15-36-101

Third Reading Votes: Senate 46-4; House 58-40

HB 333 Roush Extends for ten years the severance tax and net proceeds tax exemptions for natural gas produced from wells deeper than 5,000 feet. The exemption from the severance tax is 100%, while only one-half of net proceeds are exempt.

Amending 15-36-121

Third Reading Votes: House 79-10; Senate 47-3

HB 418 Yardley Earmarks 33 1/3% of the oil severance tax to the local government block grant account. A $42 million cap is placed on this account for the biennium ending June 30, 1985.

Amending 15-1-501 and 15-36-112

Killed:

SB 8 Stimatz Allocating 1/12 of oil severance tax collections to a highway reconstruction account for making major improvements on the state's primary and secondary systems.

Amending 15-36-112

Died in Senate Finance and Claims Committee

HB 26 Jacobsen Allocating a portion of oil and gas severance tax revenues directly to counties. Currently, producing counties receive the amount of these taxes attributable to increases in the production that occurs within that county. This revenue is then distributed among county and municipal governments based on population. This bill would have allocated 25% of the oil and gas severance tax generated in a particular county to that county regardless of increases in production.

Amending 15-36-112

Died in House Appropriations Committee

SB 437 Gage Reducing by 2/3 for a period of five years the oil and gas severance tax and the oil and gas net proceeds tax on new production. These taxes would have been imposed at the existing rate for oil and gas produced from existing wells.

Amending 15-36-101

Adverse Senate Taxation Committee Report Adopted

SB 462 Towe Increasing the rates of the oil and gas severance taxes from 6% and 2.65%, respectively, to 8% for both. Of total oil and gas severance tax revenues, 25% would have been allocated for grants and loans to local governments impacted by oil and gas development. Also, the taxable percentage of net proceeds from oil and gas wells would have been reduced from 100% to 66 2/3%.

Amending 15-6-131, 15-36-101, and 15-36-112

Died in Senate Taxation Committee

HB 713 J. Jensen Increasing from 2.65% to 6% the rate of the natural gas severance tax and allocating 56% of the revenues from this tax to an earmarked revenue fund for use in low-income energy assistance and weatherization programs.

Amending 15-1-501, 15-36-101, and 15-36-112

Died in House Taxation Committee

Resource Indemnity Trust Tax

See Also HB 200, HB 610, HB 824

Passed:

SB 72 B. Brown Requires mineral producers to prepare a quarterly report of gross yield from mineral production for purposes of assessing the RIT tax. The penalty for late payment and late reporting of this tax is made stricter.

Amending 15-38-105 through 15-38-107

Third Reading Votes: Senate 47-1; House 92-3

HB 334 Roush Appropriates $50,000 from the RIT interest account, provided monies are available after allocations are made pursuant to HB 447 (General Appropriations Act), HB 876, HB 745, and HB 597, to the 10-County Triangle Conservation District Saline Seep Control Project.

Third Reading Votes: House 91-5; Senate 47-1

HB 597 Schye Appropriates $48,000 from the RIT interest account, provided monies are available after allocations are made pursuant to HB 447, HB 876, and HB 745, to the city of Glasgow and Valley County for a joint city-county water project.

Third Reading Votes: House 92-5; Senate 46-1

HB 745 Schye Appropriates $100,000 from the RIT interest account, provided monies are available after allocations are made pursuant to HB 447 and HB 876, as a grant for the purpose of applying to the FERC for a license to install a hydroelectric plant on the Tiber Dam. Initially, the grant was intended for the Milk River Irrigation District, but was amended so that half of any money available under this act would be allocated to Liberty County, which is a partner in a competing application for the same FERC license.

Third Reading Votes: House 71-22; Senate 50-0

HB 876 Jacobsen Appropriates $150,000 from the RIT interest account, provided monies are available after allocations are made pursuant to HB 447, to DNRC for use by the Sheridan County Conservation District for evaluation, quantification, and mapping of groundwater resources in the ancestral Missouri River channel and adjacent areas.

Third Reading Votes: House 100-0; Senate 48-0

Killed:

HB 108 Manuel Appropriating 5% of the RIT interest account for use by the Cascade County Conservation District to share the cost of a seven-year flood control and irrigation improvement program for the Muddy Creek Special Water Project Area.

Died in Senate Finance and Claims Committee

HB 260 D. Brown Clarifying language in the RIT Tax Act to state unequivocally that funds may be used to mitigate mining impacts.

Amending 15-38-203

Died in Senate Finance and Claims Committee

HB 724 Daily Allocating 30% of the interest income from the RIT account to a Hard-Rock Mining Mitigation account. Warrants from this account would have been drawn by the Hard-Rock Mining Impact Board, but only for mitigating the physical adverse environmental impacts of hard-rock mining and not the socioeconomic impacts.

Amending 15-38-202, 90-6-304, and 90-6-305

Died in Senate Finance and Claims Committee

Other Taxation and Royalties

See Also HB 706

Passed:

HB 81 Nordtvedt Provides for interest to be charged on deficiency assessments and for interest credits to be allowed on overpayments of the coal severance tax, oil and gas severance taxes, mining license taxes, and others.

Third Reading Votes: House 90-0; Senate 49-0

SB 243 Towe Creates a five-year limitation for the collection of unpaid taxes on centrally assessed property, coal severance taxes, oil and gas severance taxes, mining license taxes, RIT taxes, and others.

Third Reading Votes: Senate 42-8; House 97-0

SB 441 Tveit Requires that oil and gas producers who regularly pay royalties by check, draft or order to provide the royalty owner with a record each time a royalty payment is made, stating the number of barrels of oil and/or cubic feet of gas for which payment is being made, the amount of taxes withheld, and the net value of the royalty.

Amending 45-2-311 and 82-10-102

Third Reading Votes: Senate 49-0; House 93-5

HB 616 Holliday Provides that the obligation to make royalty payments is "of the essence" in oil and gas leases. Royalties unpaid 180 days from the date due will be assessed interest at the maximum rate allowed by law.

Amending 82-10-102

Third Reading Votes: House 84-0; Senate 49-0

Killed:

SB 407 Gage Allowing a credit on the coal severance tax, the oil and gas severance tax, the mining license taxes, and the RIT tax in an amount equal to similar taxes paid to tribal governments in Montana.

Died in Senate Taxation Committee

HB 482 Hand Including oil and gas facilities in the meaning of the term "Major New Industrial Facility" for the purposes of property tax prepayment.

Amending 15-16-201

Died in House Taxation Committee

HB 829 Saunders Imposing a severance tax on the extraction of hard-rock minerals, including precious or semi-precious gems and stones. Revenues from this tax would have been allocated equally between the coal severance trust fund and a hard-rock mining impact account. The rates of the tax would have increased with a rise in the value of the product; the first $250,000 worth of production being exempt, and the highest rate, for production over $1 million, being 3½%. Any MMLT paid would have been credited against this tax liability, as would 150% of all money contributed to local governments for ordinary public services required because of the mining operation. This bill was a proposed referendum and would have required citizen approval in the next general election had it passed the legislature.

Amending 90-6-205, 90-6-304, and 90-6-305

Died in House Taxation Committee

Other

Passed:

HB 634 Compton Allows a Board of County Commissioners to lease mineral interests in land without an appraisal. Previously, all county lands offered for sale, lease, or exchange had to be appraised.

Amending 7-8-2513

Third Reading Votes: House 97-1; Senate 49-0

Killed:

reclaimed his interest by recording a statement of his claim.

Killed on Senate Second Reading

HB 8 **Ryan** Providing a mechanism for the termination of ownership of severed mineral interests. Dormant severed mineral interests would have been defined as those that had been unused for twenty years and were not recorded at the office of the Clerk and Recorder in the county in which the severed mineral interest is located. Upon abandonment of severed mineral interests, a surface owner could have claimed ownership by publishing notice of intent to do so. Within 60 days following notice, however, the owner of the lapsed mineral interest could have

SB 360 **Towe** Requiring the filing and annual registration of severed mineral interests. Surface owners would have been allowed to obtain dormant and unclaimed severed mineral interests through a claim of adverse possession. This bill also would have abolished the tax on the "right of entry."

Amending 15-6-131, 15-6-201, 15-8-111, 70-19-411, and 70-28-109

Adverse Senate Taxation Committee Report Adopted

Noise

Passed:

HB 68 **Harper** Authorizes fish and game wardens to enforce Public Nuisance and Disorderly Conduct laws against operators of noisy motorboats and creates a presumption that the offenses are being committed when a motorboat emits noise in excess of 86 decibels.

Amending 87-1-506

Third Reading Votes: House 85-12; Senate 46-4

Pest and Weed Control

Toxicants

Passed:

HB 802 **D.Brown** Generally revises the laws relating to the regulation of the sale and use of pesticides. The Department of Agriculture is authorized to impose conditions on the renewal of dealer, applicator, and operator licenses and permits and to impose civil penalties and establish fees for training courses. Annual

pesticide registration fees were increased from $15 to $50, dealer license fees were increased from $15 to $35, and a farm applicator fee was established at $15. Civil penalties for violation of pesticide laws were also increased.

Amending 80-8-105, 80-8-109, 80-8-201, 80-8-203, 80-8-204, 80-8-207, 80-8-209, 80-8-213, and 80-8-306

Third Reading Votes: House 86-11; Senate 47-1

Killed:

SB 238 Ochsner Generally revising the laws relating to the regulation of sale and use of pesticides. The Department of Agriculture would have been authorized to do many of the things authorized under HB 802, but fees and penalty charges would have been somewhat different.

Amending 80-8-105, 80-8-109, 80-8-201, 80-8-203, 80-8-204, 80-8-207, 80-8-209, 80-8-213, and 80-8-306

Other

Passed:

HB 85 Bertelsen Transfers the rodent control functions of the Department of Livestock to the Department of Agriculture and expands the program to include additional vertebrate pests and depredatory and nuisance birds when they are injurious to agriculture and other industries.

Amending 81-1-401 and 81-1-403

Third Reading Votes: House 96-0; Senate 49-0

HB 159 Ellison Authorizes the governing body of a county to establish a program for the management and suppression of vertebrate pests that may include the creation of control districts and rodent control boards and the imposition of a tax not to exceed 2 mills on the taxable valuation of all agricultural and timber lands and their improvements. Coordination between the Department of Agriculture and County Rodent Control Districts provided for.

Amending 7-22-2207, 7-22-2215, and 7-22-2216

Third Reading Votes: House 95-0; Senate 49-0

Killed:

HJR 24 R. Jensen Urging the DFWP to effectively control noxious weeds on state-owned land surrounding Ninepipe Reservoir in Lake County.

Died in House Fish and Game Committee

HB 161 Ernst Appropriating money to the Department of Agriculture for the position of State Weed Control Coordinator.

Died in House Appropriations Committee

SB 233 Marbut Allowing local governments to use up to 25% of all cash donations received in lieu of dedicating park land for noxious weed control and requiring local governments to establish weed control programs before gifts of land may be accepted for park and playground purposes.

Amending 7-22-2142, 7-22-4101, and 76-3-606

Died in Senate Agriculture Committee

SB 359 Marbut Allocating one-tenth of the coal severance tax revenue earmarked for county land planning to county noxious weed accounts, to have been distributed based on land area and population.

Amending 7-6-2218, 7-22-2142, and 15-35-108

Adverse Senate Taxation Committee Report Adopted

Public and Occupational Health

Passed:

HB 862 Shontz Amends existing law such that licensing and registration of radioactive materials and devices by the DHES is authorized but not required.

Amending 75-3-202

Third Reading Votes: House 99-0; Senate 45-1

Killed:

HB 850 Driscoll Requiring employers to disclose to employees and affected citizens, the identity and health hazards of certain substances found in the workplace and make information concerning those substances available to emergency personnel. Local fire departments would have been provided a list of the hazardous and toxic materials in the workplace and neighboring citizens could have requested this information if they resided within sight, smell or sound of the workplace. Protections would have been provided for trade secrets.

Amending 50-70-109 and 50-70-118

Died in Senate Labor Committee

Waste Control

Hazardous Waste

Passed:

SB 56 Hager Authorizes the DHES to adopt rules setting fees to be paid by hazardous waste generators to offset the administrative costs of registration.

Amending 75-10-405

Third Reading Votes: Senate 46-1; House 82-4

HB 200 Ream Designates the DHES as the lead agency responsible for implementing the Federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980 to rectify the adverse effects that have resulted from the release of hazardous substances into the environment. Appropriated from the RIT interest account is $225,000 as a 10% match for Superfund money, with 6% of the interest income from the RIT interest account to be allocated annually for this purpose beginning in Fiscal Year 1986.

Amending 15-38-202 and 75-10-523

Third Reading Votes: House 90-2; Senate 42-0

HB 203 Veleber Adopts the Northwest Interstate Compact on Low-Level Radioactive Waste Management. This compact establishes regulatory practices (primarily on-site inspections) to ensure that low-level waste shipments conform to the packaging and transportation requirements of the state where the wastes are being shipped. By joining this compact, Montana will be permitted to send its low-level radioactive waste to Washington, the designated repository state among the compact states.

Third Reading Votes: House 90-2; Senate 42-0

Junk Vehicles

Passed:

HB 96 **Yardley** Removes motor vehicle graveyards from one of two existing licensing requirements and clarifies agency authority for establishing rules for the screening of motor vehicle wrecking facilities. Additionally, any future relocation of any sanitary landfill or garbage dump by the DOH will be subject to the requirements of the Solid Waste Management Act.

Amending 75-15-203, 75-15-214, 75-15-222, and 75-15-223; Repealing 75-15-212 and 75-15-213

Third Reading Votes: House 80-20; Senate 48-2

HB 98 **Yardley** Requires that motor vehicle wrecking facilities and graveyards that have operated since July 1, 1973 without a license must be shielded from public view in order to receive a new license upon different ownership. Previously, facilities that were in operation 18 months preceding a new application for the same site, with or without a license, were exempt from the shielding requirement. Also, wrecking facilities established at new locations may be required to put up a fence higher than 12 feet.

Amending 75-10-501, 75-10-503, and 75-10-504

Third Reading Votes: House 99-0; Senate 49-0

Killed:

SB 55 **Hager** Providing that the shielding requirements for new motor vehicle wrecking facilities do not apply to sites licensed within the 18 months preceding application for a license. Previously, all operating facilities, whether licensed or not, were eligible for an exemption.

Amending 75-10-504

Died in Senate Highways Committee

Solid Waste

See Also HB 96

Passed:

HB 728 **Shontz** Authorizes counties to exercise litter and dog controls by ordinance and establishes a maximum penalty for violation of such ordinances.

Amending 7-23-104 and 7-23-2108

Third Reading Votes: House 82-3; Senate 35-14

Killed:

SB 29 **Dover** Abolishing the Class D motor carrier classification, thereby removing the PSC's authority over the transportation of solid waste material.

Amending 69-12-101, 69-12-102, 69-12-205, 69-12-301, 69-12-321, 69-12-407, and 69-12-611; Repealing 69-12-314

Died in Senate State Administration Committee

SB 182 **Hammond** Establishing requirements for the operation of Class II solid waste disposal sites for serving third class cities and rural areas. This bill would have shifted greater regulatory authority to local authorities over these smaller waste disposal sites.

Died in House Natural Resources Committee

Other

Passed:

SB 410 **Halligan** Generally revises the laws relating to licensure of cesspool, septic tank, and privy cleaning businesses. The DHES is authorized to adopt rules stipulating minimum requirements for temporary and permanent sites for disposal of septage. License fees, their disbursement, the contents of license application forms, and the inspection

responsibilities of county sanitarians are made explicit in this act.

Amending 37-41-101, 37-41-103, 37-41-201, 37-41-202, 37-41-211, and 37-41-212; Repealing 37-41-102, 37-41-203, and 37-41-204

Third Reading Votes: Senate 47-3; House 56-42

Killed:

SB 357 Jacobson Establishing a litter clean-up program along rivers. The DFWP would have administered this program, which would have been funded out of license fees imposed on the users of Montana rivers for boating recreation.

Died in Senate Fish and Game Committee

Water

Apportionment/Adjudication

Passed:

SB 99 Hager Authorizes the assignment and transfer of judges, water masters, and other court personnel between water divisions by the chief water judge as needed to facilitate the adjudication of water rights.

Amending 3-7-223. 3-7-301, and 19-5-103

Third Reading Votes: Senate 45-0; House 87-0

SB 203 Towe Places judges and justices who retire voluntarily after eight years of service subject to call by the Supreme Court to assist the Supreme Court, and District Court, or any Water Court in the adjudication of water rights.

Amending 19-5-103

Third Reading Votes: Senate 42-4; House 88-5

SB 279 Ochsner Clarifies that the summary report of a water commissioner's daily distribution of water may be filed either monthly or seasonally, at the discretion of the district judge, and that those reports must include daily costs associated with that distribution above and beyond the water commissioner's salary.

Amending 85-5-107

Third Reading Votes: Senate 45-0; House 92-0

HB 324 Veleber Provides that water users with permits and certificates issued by the DNRC must pay a proportionate share of fees and compensation to water commissioners, and that this cost is not to be borne solely by parties to a decree.

Amending 85-5-101 and 85-5-201

Third Reading Votes: House 95-3; Senate 48-0

SB 370 Etchart Generally revises laws relating to the appropriation of surface and groundwater. The DNRC is given the

authority to adopt rules necessary to reject, modify, or condition water use permit applications in highly appropriated basins or sub-basins, upon petition by 25% or ten of the water users in the basin. The department is also authorized to collect fees commensurate with its administrative costs.

Amending 85-2-112, 85-2-113, 85-2-123, 85-2-124, 85-2-236, 85-2-302, 85-2-303, 85-2-306 through 85-2-308, 85-2-311, 85-2-312, 85-2-314, 85-2-315, 85-2-402, and 85-2-403

Third Reading Votes: Senate 48-0; House 95-0

SB 401 Boylan Provides for central and local recording of water rights transfers. Record keeping is made the primary responsibility of county clerks and recorders, who will be required to send copies of transfer notices to the DNRC and the Chief Water Judge. Evidence of the transfer of real property must now state whether a transfer of water rights is included. The act also provides that a transfer of water rights without DNRC approval is not void, but rather the right may not be used until DNRC approval is granted.

Amending 85-2-403

Third Reading Votes: Senate 47-3; House 98-0

Killed:

SB 23 Hager Streamlining the hearing procedure for objections to preliminary decrees once issued, and providing that a water judge would not have been required to hold a hearing on the water master's report.

Amending 85-2-233

Died in House Judiciary Committee

SB 30 Hager Permitting the issuance of a preliminary decree prior to July 1, 1985 where there is no potential for compacts concerning reserved Indian or federal water rights. The Water Court's duty of notification concerning the availability of a preliminary decree would have been changed from informing every person who had filed a claim to each person who was named in the decree or was unnamed but requested notice.

Amending 85-2-231

Died in Senate Judiciary Committee

SB 37 Hager Making explicit that the Montana Water Courts have jurisdiction over water rights that arose both before and after 1973 and providing that judicial review of administrative proceedings of water divisions be conducted by the water judge of that division.

Amending 3-7-101, 3-7-224, 3-7-501, 3-7-502, and 85-2-121

Killed on House Second Reading

SB 41 Hager Requiring the DNRC to compile quarterly and annual summary reports of Certificates of Water Rights issued, which were to contain the names and addresses of new certificate holders and the amounts and uses of water by water division.

Amending 85-2-236

Died in House Natural Resources Committee

SB 51 McCallum Requiring that the state or any political subdivision thereof and the United States or any political subdivision thereof must apply for a reservation of water in the Missouri River basin by no later than July 1, 1985. The Board of Natural Resources would have been required to make a final determination on these reservation applications by July 1, 1987.

Died in Senate Agriculture Committee

SB 90 Boylan Granting authority to water courts to assess fees, subject to the approval of the Montana Supreme Court, to cover the cost of the general adjudication of water rights.

Amending 85-2-241

Adverse Senate Judiciary Committee Report Adopted

HB 711 Harrington Authorizing the DNRC to assess and collect fees from water claimants to pay for the expense of water adjudication. Fees would have been based on the actual costs of adjudication in a particular hydrological basin.

Amending 85-2-241

Died in House Appropriations Committee

HB 926 Thoft Reestablishing the Water Resources Oversight Committee to make recommendations and oversee the development of the state's water resources and the implementation of the water rights adjudication program.

Died in Senate Rules Committee

Development

See Also HB 926

Passed:

SB 146 D. Manning Requires that the repayment of loans made from the proceeds of water development bonds, as well as charges and fees collected by the DNRC for the servicing of those loans, be deposited in the water development earmarked account. This money is to be used for the administration of the water development program and the servicing of loans. Also, the maximum allowable amount of a water development loan is increased from $100,000 to $200,000.

Amending 17-5-704, 85-1-604, 85-1-605, 85-1-613, 85-1-616, and 85-1-617

Third Reading Votes: Senate 50-0; House 96-0

SB 321 Turnage Provides that state water projects found suitable for small-scale hydropower development do not have to be leased if to do so would cause forfeiture of a federal license, permit or exemption. Instead, the state may now develop and sell the electricity itself.

Amending 85-1-502

Third Reading Votes: Senate 48-1; House 96-3

HB 885 Jacobsen Approves the sale of Coal Severance Tax Bonds to finance three state hydroelectric projects, the rehabilitation and repair of three state dams, and loans to local governments for 19 water development projects. The total state debt for these projects will be $62.94 million. This act also provides for the private sale of municipal revenue bonds to the state.

Third Reading Votes: House 93-5; Senate 50-0

HB 897 Neuman Appropriates all available money to the DNRC for grants and loans under the Water Development Program and for grants under the Renewable Resources Development Program. Individual projects are funded according to priority, subject to the availability of funds.

Third Reading Votes: House 86-12; Senate 49-1

HB 914 Asay Provides for analysis of the potential for a joint water development project between Montana and Wyoming on the Clark Fork of the Yellowstone River. The DNRC is required to conduct an investigation to determine each state's allocable share of the Clark Fork under the Yellowstone Compact, and a legislative committee is created to conduct discussions with Wyoming officials regarding the feasibility of water projects to satisfy both states' needs.

Third Reading Votes: House 95-2; Senate 48-0

Killed:

SB 382 Etchart Providing authority to the DNRC for regulating the construction of dams and reservoirs. The department would also have been authorized to inspect dams and assess penalties for permit violations. A Technical Review Committee would have been created to make recommendations on the technical merits of dam projects.

Amending 85-15-101 and 85-15-104

Killed on Senate Second Reading

HB 610 Compton Appropriating $48,000 from the RIT interest account for a grant to the Milk River Water Users' Association for the purpose of constructing a fish ladder on the St. Mary's diversion dam.

Died in House Appropriations Committee

HB 927 Bardanouve Allowing state and local government entities to apply for grants and loans from the Water Development Program. This bill also would have given a preference to loan applicants that could pay the full market interest rate.

Amending 85-1-608 through 85-1-610 and 85-1-612

Died in Senate Rules Committee

Marketing

Passed:

HB 908 Harper Repeals the ban on the export of water for out-of-state use and authorizes the DNRC to acquire water, for industrial and other uses, from any federal reservoir. Previously, the state could only acquire water from Fort Peck Reservoir, and then only for industrial purposes. The department is also prohibited from issuing a permit for an annual appropriation of water in excess of 10,000 acre-feet per year or 15 cubic feet per second, unless certain strict "public interest" criteria are met and the legislature affirms the department's findings. Finally, a select committee on water marketing is created and assigned the task of studying the laws related to the acquisition, transportation, and use of the state's water. This act terminates June 30, 1985, thus all of its provisions are only temporary.

Amending 85-1-205 and 85-2-311; Repealing 85-1-121

Third Reading Votes: House 80-17; Senate 48-2

Killed:

HB 893 Neuman Authorizing the DNRC to acquire rights to a maximum of 50,000 acre-feet of stored water per year and establishing a mechanism by which the department could market it for industrial purposes (including coal slurry). Specifically, this bill would have: repealed the ban on the export of Montana water; amended an existing statutory definition that established coal slurry as a non-beneficial use of water by allowing the legislature to make exceptions; authorized the department to acquire water from any federal reservoir for any use (existing law allows for acquisition only from Fort Peck Reservoir and only for industrial purposes); authorized the department to enter into contracts for the sale or transfer of water to persons for coal slurry purposes contingent upon approval by the legislature for review; prohibited the marketing of water for coal slurry purposes until an environmental impact statement had been completed and submitted to the legislature for review; limited the term of contracts that provide for the sale or transfer of water by the department to a maximum of 40 years; amended the MFSA to include pipelines capable of transporting coal slurry; and created a Water Resources Oversight Committee to study issues related to water development in the state.

Amending 75-20-104, 75-20-218, 85-1-101, 85-1-102, 85-1-202, 85-1-204, 85-1-205, 85-2-104, and 85-2-311; Repealing 85-1-121

Killed on House Second Reading

HB 894 Marks Authorizing the DNRC to acquire rights to a maximum of 50,000 acre-feet per year of impounded water for the purpose of marketing water for industrial purposes. Specifically, this bill would have: repealed an existing statutory definition that established coal slurry as a non-beneficial use; amended the ban on the export of Montana water to allow water export subject to specific findings by the DNRC; authorized the DNRC to contract for the sale or transport of water for beneficial uses (including coal slurry) subject to approval by the Board of Natural Resources and Conservation; prohibited the use of water for coal slurry

purposes unless the water is classified as "low-quality" or unless it is shown that the use of "low-quality" water is not economically feasible; limited the terms of contracts that provide for the sale or transfer of water rights by the DNRC to a maximum of forty years; amended the MFSA to include pipelines costing more than $10 million and that are capable of transporting coal slurry; and created a Water Resources Oversight Committee and assigned it the task of studying water marketing and water development in Montana.

Amending 75-20-104, 75-20-216, 75-20-218, 75-20-301, 75-20-303, 75-20-304, 75-20-1202, 85-1-101, 85-1-102, 85-1-121, 85-1-202, 85-1-204, 85-1-205, 85-1-604, 85-2-102, 85-2-241, and 85-2-311; Repealing 85-2-104

Died in House Natural Resources Committee

Quality

Passed:

SB 161 Turnage Establishes a Flathead Basin Commission for the purpose of monitoring natural conditions in the Flathead River basin of Montana. The commission is charged with coordinating resource management between federal, state, provincial, tribal, and local governments and encouraging economic development and use of the basin's resources without compromising the quality of the basin's aquatic environment.

Third Reading Votes: Senate 48-0; House 96-2

HB 207 Waldron Reestablishes the Board of Water and Wastewater Operators as the Water and Wastewater Operators' Advisory Council but limiting its functions as strictly advisory. Its former licensing, continuing education, disciplinary, and examination responsibilities are to be assumed by the DHES.

Amending 2-8-103, 2-15-2105, 37-42-102, 37-42-201 through 37-42-203, 37-42-301, 37-42-302, 37-42-304, 37-42-305, 37-42-307 through 37-42-309, and 37-42-321

Third Reading Votes: House 90-9; Senate 45-0

HB 692 Bardanouve Appropriates $45,000 to the Governor's Office for administration and operation of the Flathead Basin Commission.

Third Reading Votes: House 76-17; Senate 48-0

HB 819 Asay Appropriates $60,000 to the Montana Bureau of Mines and Geology from the Renewable Resources Development Account for monitoring and assessing groundwater impacts in sensitive areas. The bureau is required to develop a network of monitor wells in appropriate areas around the Berkeley Pit and the coal fields of southeastern Montana.

Third Reading Votes: House 97-3; Senate 48-0

Stream Access

See Also SB 347

Passed:

HJR 36 Keyser Requests that an interim committee be assigned to identify the rights of landowners adjacent to public lands and waterways and the rights of the public to access and use of them. The objective of the study is to establish a means of protecting and preserving the rights of both groups.

Third Reading Votes: House 93-0; Senate 44-4

Killed:

SB 348 Galt Changing the definition of navigable streams so that only streams that were navigable in fact when Montana became a state can be considered navigable now. This bill would have removed the periodic use of a stream for floating logs and recreational uses as criteria for determining when a stream is navigable. Also, this bill would have clarified that this latter definition does not apply for purposes of determining title.

Amending 85-1-112

Died in Senate Judiciary Committee

HB 799 Neuman Transferring title of the bed of navigable streams between the low-water marks from the state to adjoining landowners in the manner prescribed for non-navigable streams.

Amending 70-1-201 and 70-1-202

Died in House Fish and Game Committee

HB 801 Neuman Allowing an owner or lessee of land adjoining a navigable stream to fence or build a bridge across the stream if warning signs are posted and maintained along the upstream shore and attached to the fence or bridge.

Died in House Fish and Game Committee

HB 877 Ream Requiring that identification decals be displayed on craft floating on streams, with the fees collected from the sale of such decals to be used for stream management activities by the DFWP.

Killed on House Second Reading

HB 888 Marks Transferring title to the bed of navigable streams from the state to adjacent landowners. This bill also would have granted the public the right to float small craft on all state waters that are floatable. Potential liability of landowners to recreationists would have been limited and prescriptive easements would not have been attainable through recreational use.

Amending 70-1-202, 70-16-201, 70-19-405, and 85-1-112

Died in Senate Agriculture Committee

Other

Passed:

HB 373 Marks Reestablishes the Board of Water Well Contractors, grants the board discretion in prescribing license fees for water well contractors, and increases the amount of the surety bonds required of water well contractors from $1,000 to $4,000.

Amending 2-8-103, 37-43-303, 37-43-305 through 37-43-307, and 37-43-311

Third Reading Votes: House 91-1; Senate 48-0

SB 428 Etchart Authorizes the establishment of county weather modification authorities by petition of 51% of the qualified electors of a county. County authorities may levy a tax not to exceed two mills for purposes of implementing weather modification programs.

Third Reading Votes: Senate 47-0; House 92-4

Killed:

HB 806 Waldron Abolishing the Board of Water Well Contractors and transferring its regulatory authority to the DNRC. The board would have been replaced by a Water Well Contractors Advisory Council possessing strictly advisory functions. This bill also would have allowed the department to repair substandard work at the contractor's expense and issue licenses, with appropriate fees, for water well drillers. Surety bonds for water well contractors would have been increased.

Amending 2-8-103, 37-43-102, 37-43-103, 37-43-202, 37-43-302 through 37-43-307, 37-43-311, and 37-43-312; Repealing 2-15-1862 and 37-43-201

Died in House Natural Resources Committee

SUMMARY OF NATURAL RESOURCE LEGISLATION

Section	Bills and Joint Resolutions Introduced	Total Passed
Air Quality	**4**	**3**
Energy		
Major Facility Siting	5	1
Renewable Energy and Conservation	17	6
Other	9	5
Subtotal	**31**	**12**
Environmental Quality		
General	5	5
MEPA	3	0
Subtotal	**8**	**5**
Fish and Wildlife		
Fishing, Hunting, etc.	20	12
Other	11	4
Subtotal	**31**	**16**
Land Use		
Annexation	3	1
Eminent Domain	3	3
Farmland Preservation	8	5
Forest Lands	8	5
Parks and Recreation	9	2
Planning	2	0
Public Lands	12	9
Spec. Dist. - Conservation Dist.	3	2
Spec. Dist. - Irrigation Dist.	8	6
Subdivisions	14	4
Zoning	4	1
Other	3	0
Subtotal	**77**	**38**
Mineral and Petroleum Development		
Exploration, Operations, Reclamation	14	9
Local Impact Mitigation		
Coal Development	7	5
Hard-Rock Mining	9	5
Taxation and Royalties		
Coal Severance	16	8
Federal Payments	2	0
Metalliferous Mines License	3	1
Net and Gross Proceeds	6	4
Oil and Gas Severance	8	3
Resource Indemnity Trust	8	5
Other Mineral Revenues	7	4
Other Mineral Development	3	1
Subtotal	**83**	**45**

Section	Bills and Joint Resolutions Introduced	Total Passed
Noise	**1**	**1**
Pest and Weed Control		
Toxicants	2	1
Other	6	2
Subtotal	**8**	**3**
Public and Occupational Health	**2**	**1**
Waste Control		
Hazardous	3	3
Junk Vehicles	3	2
Solid Waste	3	1
Other	2	1
Subtotal	**11**	**7**
Water		
Apportionment/Adjudication	14	6
Development	8	5
Marketing	3	1
Quality	4	4
Stream Access	6	1
Other	3	2
Subtotal	**38**	**19**
Grand Total	**294**	**150**

APPENDICES

Montana Environmental Policy Act

Part 1
General Provisions

75-1-101. Short title. This chapter may be cited as the "Montana Environmental Policy Act".

History: En. Sec. 1, Ch. 238, L. 1971; R.C.M. 1947, 69-6501.

Cross-References

State policy of consistency and continuity in the adoption and application of environmental rules, 90-1-101.

75-1-102. Purpose. The purpose of this chapter is to declare a state policy which will encourage productive and enjoyable harmony between man and his environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man, to enrich the understanding of the ecological systems and natural resources important to the state, and to establish an environmental quality council.

History: En. Sec. 2, Ch. 238, L. 1971; R.C.M. 1947, 69-6502.

75-1-103. Policy. (1) The legislature, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances, and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the state of Montana, in cooperation with the federal government and local governments and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can coexist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Montanans.

(2) In order to carry out the policy set forth in this chapter, it is the continuing responsibility of the state of Montana to use all practicable means consistent with other essential considerations of state policy to improve and coordinate state plans, functions, programs, and resources to the end that the state may:

(a) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(b) assure for all Montanans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

(c) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(d) preserve important historic, cultural, and natural aspects of our unique heritage and maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(e) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(f) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(3) The legislature recognizes that each person shall be entitled to a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

History: En. Sec. 3, Ch. 238, L. 1971; R.C.M. 1947, 69-6503.

Cross-References

Right to clean and healthful environment, Art. II, sec. 3, Mont. Const.

Duty to maintain a clean and healthful environment, Art. IX, sec. 1, Mont. Const.

Comments of historic preservation officer, 22-3-433.

Renewable resource development, Title 90, ch. 2.

75-1-104. Specific statutory obligations unimpaired. Nothing in 75-1-103 or 75-1-201 shall in any way affect the specific statutory obligations of any agency of the state to:

(1) comply with criteria or standards of environmental quality;

(2) coordinate or consult with any other state or federal agency; or

(3) act or refrain from acting contingent upon the recommendations or certification of any other state or federal agency.

History: En. Sec. 6, Ch. 238, L. 1971; R.C.M. 1947, 69-6506.

75-1-105. Policies and goals supplementary. The policies and goals set forth in this chapter are supplementary to those set forth in existing authorizations of all boards, commissions, and agencies of the state.

History: En. Sec. 7, Ch. 238, L. 1971; R.C.M. 1947, 69-6507.

Part 2

Environmental Impact Statements

75-1-201. General directions — environmental impact statements. (1) The legislature authorizes and directs that, to the fullest extent possible:

(a) the policies, regulations, and laws of the state shall be interpreted and administered in accordance with the policies set forth in this chapter;

(b) all agencies of the state, except as provided in subsection (2), shall:

(i) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(ii) identify and develop methods and procedures which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;

(iii) include in every recommendation or report on proposals for projects, programs, legislation, and other major actions of state government significantly affecting the quality of the human environment, a detailed statement on:

(A) the environmental impact of the proposed action;

(B) any adverse environmental effects which cannot be avoided should the proposal be implemented;

(C) alternatives to the proposed action;

(D) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and

(E) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented;

(iv) study, develop, and describe appropriate alternatives to recommend courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(v) recognize the national and long-range character of environmental problems and, where consistent with the policies of the state, lend appropriate support to initiatives, resolutions, and programs designed to maximize national cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(vi) make available to counties, municipalities, institutions, and individuals advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(vii) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(viii) assist the environmental quality council established by 5-16-101; and

(c) prior to making any detailed statement as provided in subsection (1)(b)(iii), the responsible state official shall consult with and obtain the comments of any state agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate state, federal, and local agencies which are authorized to develop and enforce environmental standards shall be made available to the governor, the environmental quality council, and the public and shall accompany the proposal through the existing agency review processes.

(2) The department of public service regulation, in the exercise of its regulatory authority over rates and charges of railroads, motor carriers, and public utilities, is exempt from the provisions of this chapter.

History: En. Sec. 4, Ch. 238, L. 1971; R.C.M. 1947, 69-6504; amd. Sec. 1, Ch. 391, L. 1979.

Cross-References

Citizens' right to participate satisfied if environmental impact statement filed, 2-3-104.

Statement to contain information regarding heritage properties and paleontological remains, 22-3-433.

Statement under lakeshore protection provisions required, 75-7-213.

Impact statement for facility siting, 75-20-211.

Energy emergency provisions — exclusion, 90-4-310.

75-1-202. Agency rules to prescribe fees. Each agency of state government charged with the responsibility of issuing a lease, permit, contract, license, or certificate under any provision of state law may adopt rules prescribing fees which shall be paid by a person, corporation, partnership, firm, association, or other private entity when an application for a lease, permit,

contract, license, or certificate will require an agency to compile an environmental impact statement as prescribed by 75-1-201. An agency must determine within 30 days after a completed application is filed whether it will be necessary to compile an environmental impact statement and assess a fee as prescribed by this part. The fee assessed under this part shall be used only to gather data and information necessary to compile an environmental impact statement as defined in this chapter. No fee may be assessed if an agency intends only to file a negative declaration stating that the proposed project will not have a significant impact on the human environment.

History: En. 69-6518 by Sec. 1, Ch. 329, L. 1975; R.C.M. 1947, 69-6518(1).

Cross-References

Fees authorized for environmental review of subdivision plats, 76-4-105.

Fees in connection with environmental impact statement required before issuing permits to appropriate water, 85-2-124.

75-1-203. Fee schedule — maximums. (1) In prescribing fees to be assessed against applicants for a lease, permit, contract, license, or certificate as specified in 75-1-202, an agency may adopt a fee schedule which may be adjusted depending upon the size and complexity of the proposed project. No fee may be assessed unless the application for a lease, permit, contract, license, or certificate will result in the agency incurring expenses in excess of $2,500 to compile an environmental impact statement.

(2) The maximum fee that may be imposed by an agency shall not exceed 2% of any estimated cost up to $1 million, plus 1% of any estimated cost over $1 million and up to $20 million, plus ½ of 1% of any estimated cost over $20 million and up to $100 million, plus ¼ of 1% of any estimated cost over $100 million and up to $300 million, plus ⅛ of 1% of any estimated cost in excess of $300 million.

(3) If an application consists of two or more facilities, the filing fee shall be based on the total estimated cost of the combined facilities. The estimated cost shall be determined by the agency and the applicant at the time the application is filed.

(4) Each agency shall review and revise its rules imposing fees as authorized by this part at least every 2 years. Furthermore, each agency shall provide the legislature with a complete report on the fees collected prior to the time that a request for an appropriation is made to the legislature.

History: En. 69-6518 by Sec. 1, Ch. 329, L. 1975; R.C.M. 1947, 69-6518(2), (7).

75-1-204. Application of administrative procedure act. In adopting rules prescribing fees as authorized by this part, an agency shall comply with the provisions of the Montana Administrative Procedure Act.

History: En. 69-6518 by Sec. 1, Ch. 329, L. 1975; R.C.M. 1947, 69-6518(4).

Cross-References

Montana Administrative Procedure Act — adoption and publication of rules, Title 2, ch. 4, part 3.

75-1-205. Use of fees. All fees collected under this part shall be deposited in the state special revenue fund as provided in 17-2-102. All fees paid pursuant to this part shall be used as herein provided. Upon completion

of the necessary work, each agency will make an accounting to the applicant of the funds expended and refund all unexpended funds without interest.

History: En. 69-6518 by Sec. 1, Ch. 329, L. 1975; R.C.M. 1947, 69-6518(5); amd. Sec. 1, Ch. 277, L. 1983.

Compiler's Comments

1983 Amendment: Substituted reference to state special revenue fund for reference to earmarked revenue fund.

75-1-206. Multiple applications or combined facility. In cases where a combined facility proposed by an applicant requires action by more than one agency or multiple applications for the same facility, the governor shall designate a lead agency to collect one fee pursuant to this part, to coordinate the preparation of information required for all environmental impact statements which may be required, and to allocate and disburse the necessary funds to the other agencies which require funds for the completion of the necessary work.

History: En. 69-6518 by Sec. 1, Ch. 329, L. 1975; R.C.M. 1947, 69-6518(6).

75-1-207. Major facility siting applications excepted. No fee as prescribed by this part may be assessed against any person, corporation, partnership, firm, association, or other private entity filing an application for a certificate under the provisions of the Montana Major Facility Siting Act, chapter 20 of this title.

History: En. 69-6518 by Sec. 1, Ch. 329, L. 1975; R.C.M. 1947, 69-6518(3).

Part 3

Environmental Quality Council

75-1-301. Definition of council. In this part "council" means the environmental quality council provided for in 5-16-101.

History: En. by Code Commissioner, 1979.

Cross-References

Qualifications, 5-16-102.
Term of membership, 5-16-103.
Officers, 5-16-105.

75-1-302. Meetings. The council may determine the time and place of its meetings but shall meet at least once each quarter. Each member of the council is entitled to receive compensation and expenses as provided in 5-2-302. Members who are full-time salaried officers or employees of this state may not be compensated for their service as members but shall be reimbursed for their expenses.

History: En. Sec. 10, Ch. 238, L. 1971; amd. Sec. 6, Ch. 103, L. 1977; R.C.M. 1947, 69-6510.

75-1-303 through 75-1-310 reserved.

75-1-311. Examination of records of government agencies. The council shall have the authority to investigate, examine, and inspect all records, books, and files of any department, agency, commission, board, or institution of the state of Montana.

History: En. Sec. 15, Ch. 238, L. 1971; R.C.M. 1947, 69-6515.

75-1-312. Hearings — council subpoena power — contempt proceedings. In the discharge of its duties the council shall have authority to hold hearings, administer oaths, issue subpoenas, compel the attendance of witnesses and the production of any papers, books, accounts, documents, and testimony, and to cause depositions of witnesses to be taken in the manner prescribed by law for taking depositions in civil actions in the district court. In case of disobedience on the part of any person to comply with any subpoena issued on behalf of the council or any committee thereof or of the refusal of any witness to testify on any matters regarding which he may be lawfully interrogated, it shall be the duty of the district court of any county or the judge thereof, on application of the council, to compel obedience by proceedings for contempt as in the case of disobedience of the requirements of a subpoena issued from such court on a refusal to testify therein.

History: En. Sec. 16, Ch. 238, L. 1971; R.C.M. 1947, 69-6516.

Cross-References

Warrant of attachment or commitment for contempt, 3-1-513.

Depositions upon oral examinations, Rules 30(a) through 30(g), 31(a) through 31(c), M.R.Civ.P. (see Title 25, ch. 20).

Subpoena — disobedience, 26-2-104 through 26-2-107.

Criminal contempt, 45-7-309.

75-1-313. Consultation with other groups — utilization of services. In exercising its powers, functions, and duties under this chapter, the council shall:

(1) consult with such representatives of science, industry, agriculture, labor, conservation organizations, educational institutions, local governments, and other groups as it deems advisable; and

(2) utilize, to the fullest extent possible, the services, facilities, and information (including statistical information) of public and private agencies and organizations and individuals in order that duplication of effort and expense may be avoided, thus assuring that the council's activities will not unnecessarily overlap or conflict with similar activities authorized by law and performed by established agencies.

History: En. Sec. 17, Ch. 238, L. 1971; R.C.M. 1947, 69-6517.

75-1-314 through 75-1-320 reserved.

75-1-321. Appointment and qualifications of executive director. The council shall appoint the executive director and set his salary. The executive director shall hold a degree from an accredited college or university with a major in one of the several environmental sciences and shall have at least 3 years of responsible experience in the field of environmental management. He shall be a person who, as a result of his training, experience, and attainments, is exceptionally well qualified to analyze and interpret environmental trends and information of all kinds; to appraise programs and activities of the state government in the light of the policy set forth in 75-1-103; to be conscious of and responsive to the scientific, economic, social, aesthetic, and cultural needs and interests of the state; and to formulate and recommend state policies to promote the improvement of the quality of the environment.

History: En. Sec. 11, Ch. 238, L. 1971; R.C.M. 1947, 69-6511.

75-1-322. Term and removal of executive director. The executive director is solely responsible to the council. He shall hold office for a term of 2 years beginning with July 1 of each odd-numbered year. The council may remove him for misfeasance, malfeasance, or nonfeasance in office at any time after notice and hearing.

History: En. Sec. 13, Ch. 238, L. 1971; R.C.M. 1947, 69-6513.

Cross-References

Official misconduct, 45-7-401.

Notice of removal to officer authorized to replace, 2-16-503.

75-1-323. Appointment of employees. The executive director, subject to the approval of the council, may appoint whatever employees are necessary to carry out the provisions of this chapter, within the limitations of legislative appropriations.

History: En. Sec. 12, Ch. 238, L. 1971; R.C.M. 1947, 69-6512.

75-1-324. Duties of executive director and staff. It shall be the duty and function of the executive director and his staff to:

(1) gather timely and authoritative information concerning the conditions and trends in the quality of the environment, both current and prospective, analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering or are likely to interfere with the achievement of the policy set forth in 75-1-103, and compile and submit to the governor and the legislature studies relating to such conditions and trends;

(2) review and appraise the various programs and activities of the state agencies, in the light of the policy set forth in 75-1-103, for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy and make recommendations to the governor and the legislature with respect thereto;

(3) develop and recommend to the governor and the legislature state policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the state;

(4) conduct investigations, studies, surveys, research, and analyses relating to ecological systems and environmental quality;

(5) document and define changes in the natural environment, including the plant and animal systems, and accumulate necessary data and other information for a continuing analysis of these changes or trends and an interpretation of their underlying causes;

(6) make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the legislature requests;

(7) analyze legislative proposals in clearly environmental areas and in other fields where legislation might have environmental consequences and assist in preparation of reports for use by legislative committees, administrative agencies, and the public;

(8) consult with and assist legislators who are preparing environmental legislation to clarify any deficiencies or potential conflicts with an overall ecologic plan;

(9) review and evaluate operating programs in the environmental field in the several agencies to identify actual or potential conflicts, both among such

activities and with a general ecologic perspective, and suggest legislation to remedy such situations;

(10) annually, beginning July 1, 1972, transmit to the governor and the legislature and make available to the general public an environmental quality report concerning the state of the environment, which shall contain:

(a) the status and condition of the major natural, manmade, or altered environmental classes of the state, including but not limited to the air, the aquatic (including surface water and groundwater) and the terrestrial environments, including but not limited to the forest, dryland, wetland, range, urban, suburban, and rural environments;

(b) the adequacy of available natural resources for fulfilling human and economic requirements of the state in the light of expected population pressures;

(c) current and foreseeable trends in the quality, management, and utilization of such environments and the effects of those trends on the social, economic, and other requirements of the state in the light of expected population pressures;

(d) a review of the programs and activities (including regulatory activities) of the state and local governments and nongovernmental entities or individuals, with particular reference to their effect on the environment and on the conservation, development, and utilization of natural resources; and

(e) a program for remedying the deficiencies of existing programs and activities, together with recommendations for legislation.

History: En. Sec. 14, Ch. 238, L. 1971; R.C.M. 1947, 69-6514.

Model Agency Rules to Implement MEPA

Policy Statement Concerning MEPA Rules. The purpose of these rules is to implement Chapter 1, Title 75, MCA, the Montana Environmental Policy Act (MEPA), through the establishment of administrative procedures. In order to fulfill the stated policy of that act, an agency shall conform to the following rules prior to reaching a final decision on actions covered by MEPA. It must be noted that the act requires that state agencies comply with its terms "to the fullest extent possible."

Definition of MEPA Terms. (1) "Cumulative impact" means the incremental cumulation of impacts on the human environment of the proposed action when considered in conjunction with other past and present actions related to the proposed action by location or generic type. Related future actions must also be considered when these actions are under concurrent consideration by any state agency through pre-impact statement studies, separate impact statement evaluation, or permit processing procedures.

(2) "Emergency actions" include, but are not limited to:

(a) projects undertaken, carried out, or approved by the department to repair or restore property or facilities damaged or destroyed as a result of a disaster when a disaster has been declared by the Governor or other appropriate government entity;

(b) emergency repairs to public service facilities necessary to maintain service; or

(c) projects, whether public or private, undertaken to prevent or mitigate immediate threats to public health, safety, welfare, or the environment.

(3) "Environmental impact statement" (EIS) means the detailed written statement required by section 75-1-201, which may take several forms:

(a) "Draft environmental impact statement" means a detailed written statement prepared to the fullest extent possible in accordance with section 75-1-201(1)(b)(iii), and Rule V.

(b) "Final environmental impact statement" means a written statement prepared to the fullest extent possible in accordance with section 75-1-201 and these rules and which responds to substantive comments received on the draft environmental impact statement.

(c) "Joint environmental impact statement" means an EIS prepared jointly by more than one agency, either state or federal, when the agencies are involved in the same or closely related proposed action.

(4) "Environmental quality council" (EQC) means the council established pursuant to Title 75, Chapter 1.

(5) "Human environment" includes, but is not limited to biological, physical, social, economic, cultural, and aesthetic factors that interrelate to form the environment.

(6) "Lead agency" means the state agency that has primary authority for committing the government to a course of action having significant environmental impact or the agency designated by the governor to supervise the preparation of a joint environmental impact statement.

(7) "Preliminary environmental review" (PER) means a brief written statement on a proposed action to determine whether the action will significantly affect the quality of the human environment and therefore requires a draft environmental impact statement.

(8) "Programmatic review" is a general analysis of related agency-initiated actions, programs or policies, or the continuance of a broad policy or program which may involve a series of future actions,

(9) "Secondary impact" means the effects an action may have of stimulating, inducing, or inhibiting impacts.

(10) "State agency," "agency" or "department" means an office, commission, committee, board, department, council, division, bureau, or section of the executive branch of state government.

Determination of Necessity for Environmental Impact Statement. (1) A department shall prepare a PER to determine whether an EIS is necessary in the following situations:

(a) when the proposed action is one that normally requires an EIS, but, because of special circumstances, the action may not be a major one significantly affecting the quality of the human environment;

(b) when the proposed action is one that normally does not require an EIS, but, because of special circumstances, the action may be a major one significantly affecting the quality of the human environment;

(c) the action is not one required to be listed under (6) below and it is not clear without preparation of a PER whether the proposed action is a major one significantly affecting the quality of the human environment.

(2) The department shall prepare an EIS in the following situations:

(a) when the proposed action is one that normally requires an EIS under (6) of this rule and there are not special circumstances;

(b) when a PER indicates that an EIS is necessary; or

(c) when the proposed action is so clearly a major action of state government significantly affecting the quality of the human environment that no PER is necessary.

(3) The following are categories of actions which normally require the preparation of an EIS:

(a) actions which may significantly affect environmental attributes recognized as being endangered, fragile, or in severely short supply;

(b) actions which may be either significantly growth inducing or growth inhibiting;

(c) actions which may substantially alter environmental conditions in terms of quality or availability; or

(d) actions which will result in substantial cumulative impacts.

(4) An EIS is not required for the following actions:

(a) administrative actions: routine, clerical or similar functions of the department, including but not limited to administrative procurements, contracts for consulting services, and personnel actions;

(b) existing facilities: minor repairs, operations or maintenance of existing equipment or facilities;

(c) investigation and enforcement: data collection, inspection of facilities, or enforcement of environmental standards;

(d) non-discretionary actions: actions in which the agency exercises no discretion, but rather acts upon a given state of facts in a prescribed manner.

(5) If the PER shows a significant impact on the quality of the human environment, an EIS shall be prepared on that action.

(6) The department shall adopt a list of those activities or functions that normally require an EIS or do not require either an EIS or a PER in accordance with rulemaking procedures provided by the Montana Administrative Procedure Act (Chapter 4, Title 2).

Preparation of Preliminary Environmental Review. (1) A PER shall include:

(a) an adequate description of the proposed action, including maps and graphs, if appropriate;

(b) an evaluation of the immediate, cumulative, and secondary impacts on the physical environment, through the use of checklist and a brief narrative, including where appropriate: terrestrial and aquatic life and habitats; water quality, quantity, and distribution; geology; soil quality, stability, and moisture; vegetation cover, quantity and quality; aesthetics; air quality; unique, endangered, fragile, or limited environmental resources; historical and archaeological sites; and demands on environmental resources of land, water, air and energy;

(c) an evaluation of the immediate, cumulative, and secondary impacts on human population in the area to be affected by the proposed action, through the use of a checklist and brief narrative, including where appropriate: social structures and mores, cultural uniqueness and diversity, access to and quality of recreational and wilderness activities, local and state tax base and tax revenues, agricultural or industrial production, human health, quantity and distribution of community and personal income, transportation networks and traffic flows, quantity and distribution of employment, distribution and density of population and housing, demands for government services, industrial and commercial activity, and locally adopted environmental plans and goals;

(d) a listing of other agencies or groups that have been contacted or which may have overlapping jurisdiction;

(e) the names of those individuals or groups contributing to and responsible for compiling the PER.

(2) A PER is a public document and may be inspected upon request by any person. Any person may obtain a copy of a PER by making a request to the department. The department may give public notice of the availability of the PER and may distribute it. The department shall submit a copy of each completed PER to the EQC.

Preparation and Contents of Draft Environmental Statements. If required by these rules, a department shall prepare a draft environmental impact statement which shall include:

(1) a description of the nature and objectives of the proposed action;

(2) a description of the current environmental conditions in the area significantly affected by the proposed action, including maps and charts, where appropriate;

(3) a description of the impacts on the quality of the human environment by the proposed action including:

(a) the factors listed in (1)(a) and (b), of the preceding rule where appropriate;

(b) primary, secondary, and cumulative impacts;

(c) potential growth-inducing or growth-inhibiting impacts;

(d) irreversible and irretrievable commitments of environmental resources, including land, air, water and energy;

(e) economic and environmental benefits and costs of the proposed action (if a benefit-cost analysis is considered for the proposed action, it shall be incorporated by reference or appended to the statement to aid in evaluating the environmental consequences);

(f) the relationship between local short-term uses of man's environment and the effects on maintenance and enhancement of the long-term productivity of the environment;

(g) additional or secondary impacts at the local or area level, if any;

(4) a description of reasonable alternative actions that could be taken by the department;

(5) the proposed agency decision on the proposed action, if appropriate;

(6) source material used in the preparation of the draft EIS and;

(7) the names of those individuals or groups responsible for compiling the draft EIS and the names of those individuals or groups contributing to the EIS; and

(8) a summary of the EIS.

Adoption of Draft Environmental Impact Statement as Final. (1) Depending upon the nature and number of substantive comments received in response to the draft environmental impact statement, the draft statement may suffice. In this case, a department shall submit one copy of all comments or a summary of a representative sample of comments received in response to the draft statement to the governor, EQC, the applicant whose project is being evaluated in the EIS, and all commentators. The department shall determine whether a final EIS is necessary within 30 days of the close of the comment period on the draft EIS.

(2) If the department determines that a final EIS is not necessary, it may make a final decision on the proposed action no sooner than 15 days after complying with subsection (1) above. The department shall also include with the comments notice of its decision not to prepare a final EIS and a statement describing its proposed course of action. The applicant whose project is being evaluated in the EIS may request an extension of this 15-day period in order to respond to the written comments that have been received.

Preparation and Contents of Final Environmental Impact Statements. A final environmental impact statement shall include:

(1) a summary of major conclusions and supporting information from the draft EIS and the responses to substantive comments received on the draft EIS, stating

specifically where such conclusions and information were changed from those which appeared in the draft;

(2) a list of all sources of written and oral comments on the draft EIS, including those obtained at public hearings, and, unless impractical, the text of comments received by the department (in all cases, a representative sample of comments shall be included);

(3) the department's responses to substantive comments (these responses shall include an evaluation of the comments received and a disposition of the issues involved);

(4) data, information, and explanations obtained subsequent to circulation of the draft;

(5) the department's recommendation for the final agency decision on the proposed action, where appropriate.

Time Limits and Distribution of Environmental Impact Statements. (1) Following preparation of a draft EIC, a department shall distribute copies to the Governor, EQC, appropriate state and federal agencies, the applicant, and persons who have requested copies.

(2) The listed transmittal date to the Governor and the EQC shall not be earlier than the date that the draft EIS is mailed to other agencies, organizations, and individuals. The department shall allow 30 days for reply; provided that the department may extend this period up to an additional 30 days upon application of any person for good cause. No extension which is otherwise prohibited by law may be granted.

(3) After the period for comment on the draft EIS has expired, a copy of all written comments received by the department shall be sent to the applicant whose project is being evaluated in the EIS. The applicant shall be advised that he has a reasonable time to respond in writing to the comments received by the department on the draft EIS and that the applicant's written response must be received before a final EIS can be prepared and circulated. The applicant may waive his right to respond to the comments on the draft EIS.

(4) No action which requires the preparation of a final EIS shall be taken sooner than 45 days after the transmittal date of the draft EIS to the governor and EQC.

(5) Except as provided by rule when a final EIS is not prepared, a final decision may not be made on the proposed action being evaluated in the EIS until 15 days have expired from the date of transmittal of the final EIS to the governor and EQC. The listed transmittal date to the governor and EQC shall not be earlier than the date that the final EIS is mailed to other agencies, organizations, and individuals.

(6) Following preparation of a final EIS, the department shall distribute copies to the governor, EQC, appropriate state and federal agencies, the applicant, persons who submitted comments on or received a copy of the EIS, and other members of the public upon request.

(7) All written comments received on an EIS, including written responses received from the applicant, shall be made available to the public upon request.

(8) Until an agency reaches its final decision on the proposed action, no action concerning the proposal shall be taken which would:

(a) have an adverse environmental impact; or

(b) limit the choice of reasonable alternatives, including the no-action alternative.

Supplements to Environmental Impact Statements. (1) The department shall prepare supplements to either draft or final environmental impact statements if:

(a) the department or the applicant makes substantial changes in the proposed action; or

(b) there are significant new circumstances, discovered prior to final agency decision, including information bearing on the proposed action or its impacts which change the basis for decision.

(2) The same time periods applicable to draft and final EISs specified in these rules apply to the circulation and review of supplements.

Incorporation by Reference and Adoption. (1) A department shall adopt and incorporate by reference as part of a draft EIS all or any part of the information, conclusions, comments, and responses to comments contained in an existing EIS which has been previously or is being contemporaneously prepared pursuant to the Montana Environmental Policy Act or the National Environmental Policy Act if:

(a) the department determines that the existing EIS covers an action paralleling or closely related to the action proposed by the department or the applicant;

(b) the department determines, on the basis of its own independent evaluation, that the information contained in the existing EIS has been accurately presented; and

(c) the department determines that the information contained in the existing EIS is applicable to the action currently being considered.

(2) A summary of the existing EIS or the portion adopted or incorporated by reference and a list of places where the full text is available shall be circulated as a part of the EIS and treated as part of the EIS for all purposes, including, if required, preparation of a final EIS.

(3) If all or any part of an existing EIS is adopted or incorporated by reference, the department shall prepare an addendum as part of the draft EIS. The addendum shall include as a minimum:

(a) a description of a specific action to be taken; and

(b) any impacts, alternatives, or other items that were not covered in the original statement.

(4) The department shall take full responsibility for the portions of the previous EIS adopted or incorporated. If the department disagrees with certain portions of the previous EIS, the points of disagreement shall be specifically discussed in the addendum.

(5) No material may be adopted or incorporated by reference unless it is reasonably available for inspection by interested persons within the time allowed for comment.

(6) Where part of an existing EIS or contemporaneously prepared EIS is incorporated by reference, that part incorporated shall include sufficient material to insure the part incorporated will be considered in the context it was presented in the original EIS.

Length, Format, and Summary of Environmental Impact Statement. (1) The recommended maximum length of the text of either a draft or final EIS is 150 pages. For an EIS on a complex proposal the recommended maximum length is 300 pages.

(2) An EIS shall be written in plain and concise language.

(3) A department shall prepare with the draft and final EIS a brief summary which shall be available for distribution separate from the EIS. The summary shall describe:

(a) the proposed action being evaluated by the EIS, the impacts, and the alternatives;

(b) areas of controversy and major conclusions; and

(c) a department's proposed decision, when appropriate.

Interagency Cooperation. When it is a lead agency, a department may request the participation in preparation of an EIS of other state agencies which have special expertise in areas which should be addressed in the EIS. When participation of a department is requested under this rule, it shall make a good-faith effort to participate in the EIS as requested, with its expenses for participation in the EIS paid by the agency collecting the EIS fee if one is collected.

Joint Environmental Impact Statements. (1) If two or more state agencies have jurisdiction over a project, proposal, or major state action which will have a significant impact on the quality of the human environment and one is clearly the lead agency, a department shall cooperate with the lead agency in the preparation of a joint EIS. If a department is clearly the lead agency, it shall be responsible for coordinating the preparation of the EIS as required by this rule. When two or more agencies have jurisdiction over the same project, proposal or major state action and lead agency status cannot be resolved, the departments shall request a determination from the governor. The departments shall resolve the lead agency question or submit it to the governor within 15 days of complete application.

(2) A department shall cooperate with federal and local agencies in preparing EISs. This cooperation may include:

(a) joint environmental research studies,

(b) joint public hearings, or

(c) joint environmental impact statements. (When federal laws have EIS requirements, a department shall, when practical and expedient, cooperate in fulfilling the requirement of the federal as well as the state laws so that one document will comply with all applicable laws.)

Preparation, Content and Distribution of a Programmatic Review. (1) If a department is contemplating a series of agency-initiated actions, programs, or policies which in part or in total will constitute a major state action significantly affecting the quality of the human environment, the department may prepare a programmatic review discussing the impacts of the series of actions.

(2) The programmatic review shall include, as a minimum, a concise, analytical discussion of alternatives and the cumulative environmental effects of these alternatives.

(3) The time limits specified for distribution and public comment of EISs apply to the distribution of programmatic reviews.

(4) While work on a programmatic EIS is in progress, a department may not take major state actions covered by the program in that interim period unless such action:

(a) is part of an ongoing program;

(b) is justified independently of the program; or

(c) will not prejudice the ultimate decision on the program. Interim action prejudices the ultimate decision on the program when it tends to determine subsequent development or foreclose reasonable alternatives.

(5) Actions taken under subsection (4) shall be accompanied by an EIS, if required.

Emergencies. A department may take or permit action having a significant impact on the quality of the human environment in an emergency situation without preparing an EIS. Within 30 days following initiation of the action, the department shall notify the Governor and the EQC as to the need for such action and the impacts and results of it. Emergency actions shall be limited to those actions immediately necessary to control the impacts of the emergency.

Confidentiality. Information declared confidential by state law or by an order of a court shall be excluded from a PER and EIS. An agency shall briefly state the general topic of the confidential information excluded.

Resolution of Statutory Conflicts. If conflicting provisions of other state laws prevent a department from fully complying with this subchapter, the department shall notify the Governor and the EQC of the nature of the conflict and shall suggest a proposed course of action that will enable the department to comply to the fullest extent possible with the provisions of MEPA. This modification shall be prepared within 45 days of decision on the project, proposal, or major state action.

Disclosure. No person who has a financial interest in the outcome of the project may contract with a department for the preparation of an EIS or any portion thereof. Persons contracting with the department in the preparation of an EIS must execute a disclosure statement, in affidavit form prepared by the department, demonstrating compliance with this prohibition.

Public Hearings. (1) When a public hearing is held on an EIS, a department shall advise the applicant whose project is being evaluated in the EIS, persons who have submitted comments on the draft EIS, and persons who received a copy of the draft EIS of the date and location of the hearing and that the applicant shall have an opportunity to respond to all oral comments received at the hearing. The department shall also issue a news release to radio stations and newspapers of general circulation in the area to be affected by the proposal prior to the hearing. If the newspaper articles pursuant to these news releases do not appear, the department shall cause a legal notice to appear in a newspaper of general circulation in the area to be affected. The news release and notice shall advise the public as to the

nature of testimony it wishes to receive at the hearing. The applicant may respond orally at the conclusion of the hearing and in writing at a later date. The hearing shall be held after the draft EIS has been circulated and prior to preparation of the final EIS.

(2) The department shall hold a public hearing if requested within 20 days of issuance of the draft EIS by either:

(a) 10% or 25, whichever is less, of the persons who will be directly affected by the proposed action, or

(b) by another agency which has jurisdiction over the action, or

(c) an association having not less than 25 members who will be directly affected. Instances of doubt shall be resolved in favor of holding a public hearing.

(3) No person may give testimony at the hearing as a representative of a participating agency. Such a representative may, however, at the discretion of the hearing officer, give a statement regarding his or her agency's authority on procedures and answer questions from the public.

Fees: Determination of Authority to Impose. (1) When an application for a lease, permit, contract, license or certificate is expected to result in a department incurring expenses in excess of $2,500 to compile an environmental impact statement, the applicant shall be required to pay a fee in an amount which the department reasonably estimates, as set forth in this rule, will be expended to gather information and data necessary to compile an EIS.

(2) The department will determine within 30 days after a completed application is filed whether it will be necessary to compile an environmental impact statement and assess a fee as prescribed by this rule. If it is determined that an environmental impact statement is necessary, the department shall make a preliminary estimate of the costs to compile the statement. This estimate will include a summary of the data and information needs and the itemized costs of acquiring the data and information, including salaries, equipment costs and any other expense associated with the collection of data and information for the EIS.

(3) If the preliminary estimated costs of acquiring the data and information to prepare an EIS total more than $2,500, the department shall notify the applicant that a fee must be paid and submit an itemized preliminary estimate of the cost of acquiring the data and information necessary to compile an EIS. The applicant shall also be advised that a notarized and detailed estimate of the cost of the project being reviewed in the EIS must be submitted within 15 days after receipt of the request. In addition, the applicant shall be asked to describe the data and information available or being prepared by the applicant which can possibly be used in the EIS. The applicant may indicate which of the department's estimated costs of acquiring data and information for the EIS would be duplicative or excessive. The applicant shall be granted upon request an extension of the 15-day period for submission of an estimate of the project's cost and a critique of the department's preliminary EIS data and information accumulation cost assessment.

Fees: Determination of Amount. (1) After receipt of the applicant's estimated cost of the project and analysis of a department's preliminary estimate of the cost of acquiring information and data for the EIS, the department shall notify the applicant within 15 days of the final amount of the fee to be assessed. The fee assessed shall be based on the projected cost of acquiring all of the information and data needed for the EIS. If the applicant has gathered or is in the process of gathering information and data that can be used in the EIS, the department shall only use that portion of the fee that is needed to verify the information and data. Any unused portion of the fee assessed may be returned to the applicant within a reasonable time after the information and data have been collected or the information and data submitted by the applicant have been verified, but in no event later than the deadline specified in these rules. The department may extend the 15-day period provided for review of the applicant's submittal but not to exceed 45 days if it believes that the project cost estimate submitted is inaccurate or additional information must be obtained to verify the accuracy of the project cost estimate. The fee assessed shall not exceed the following limitations:

(a) 2% of any estimated cost up to $1,000,000, plus

(b) 1% of any estimated cost over $1,000,000 and up to $20,000,000, plus

(c) ½ of 1% of any estimated cost over $20,000,000 and up to $100,000,000, plus

(d) ¼ of 1% of any estimated cost over $100,000,000 and up to $300,000,000, plus

(e) ⅛ of 1% of any estimated cost in excess of $300,000,000.

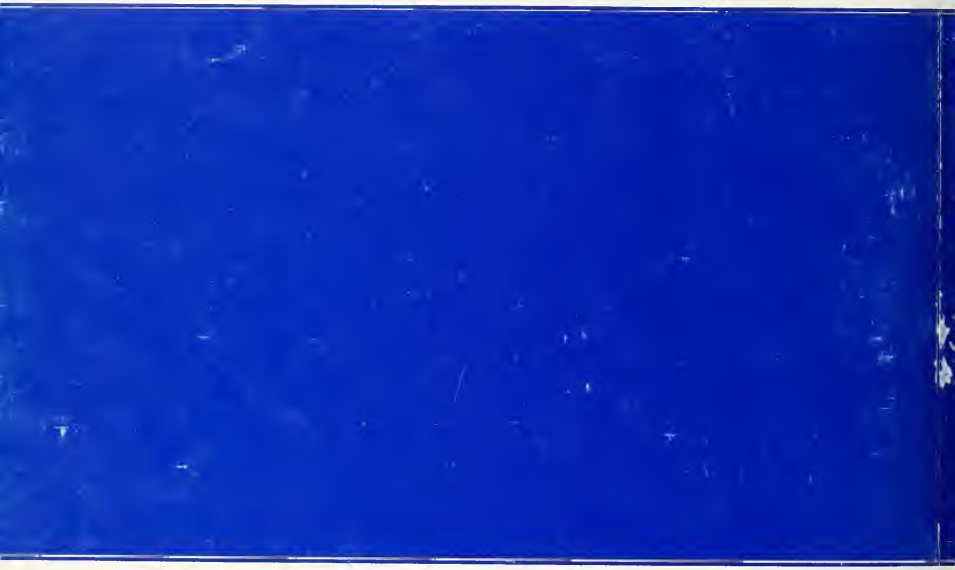
(2) If an applicant for a lease, permit, contract, license or certificate believes that the fee assessed is excessive or does not conform to the requirements of this rule or Title 75, Chapter 1, Part 2, MCA, the applicant may request a hearing before the board pursuant to the contested case provisions of the Montana administrative procedure act. If a hearing is held on the fee assessed as authorized by this subsection, the department shall proceed with its analysis of the project wherever possible. The fact that a hearing has been requested shall not be grounds for delaying consideration of an application except to the extent that the portion of the fee in question affects the ability of the department to collect the data and information necessary for the EIS.

Use of Fee. (1) The fee assessed hereunder shall only be used to gather data and information necessary to compile an environmental impact statement. No fee may be assessed if a department intends only to compile a preliminary environmental review or a programmatic review. If the department collects a fee and later determines that additional data and information must be collected or that data and information supplied by the applicant and relied upon by the department are inaccurate or invalid, an additional fee may be assessed under the procedures outlined in these rules if the maximum fee has not been collected.

(2) When the department has completed work on the EIS, a complete accounting of how the department expended the fee collected shall be submitted to the applicant. If the cost of compiling an environmental impact statement is less than the fee collected, the remainder of the fee shall be refunded to the applicant without interest within 45 days after work has been completed on the final EIS.

Documents Submitted under MEPA, 1981-1983

	1983		1982		1981		TOTAL	
	PER	EIS	PER	EIS	PER	EIS	PER	EIS
Health and Environmental Sciences	39		30		26	1	95	1
Highways	28	1	29	5	31	9	88	15
State Lands	17	4	6	5	6	7	29	16
Fish, Wildlife and Parks	12	1	7	1	13		32	2
Natural Resources and Conservation	5	1	3	2	9		17	3
Commerce	2						2	
Agriculture		1	3				3	1
Budget and Program Planning					3		3	
TOTAL	103	8	78	13	88	17	269	38



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